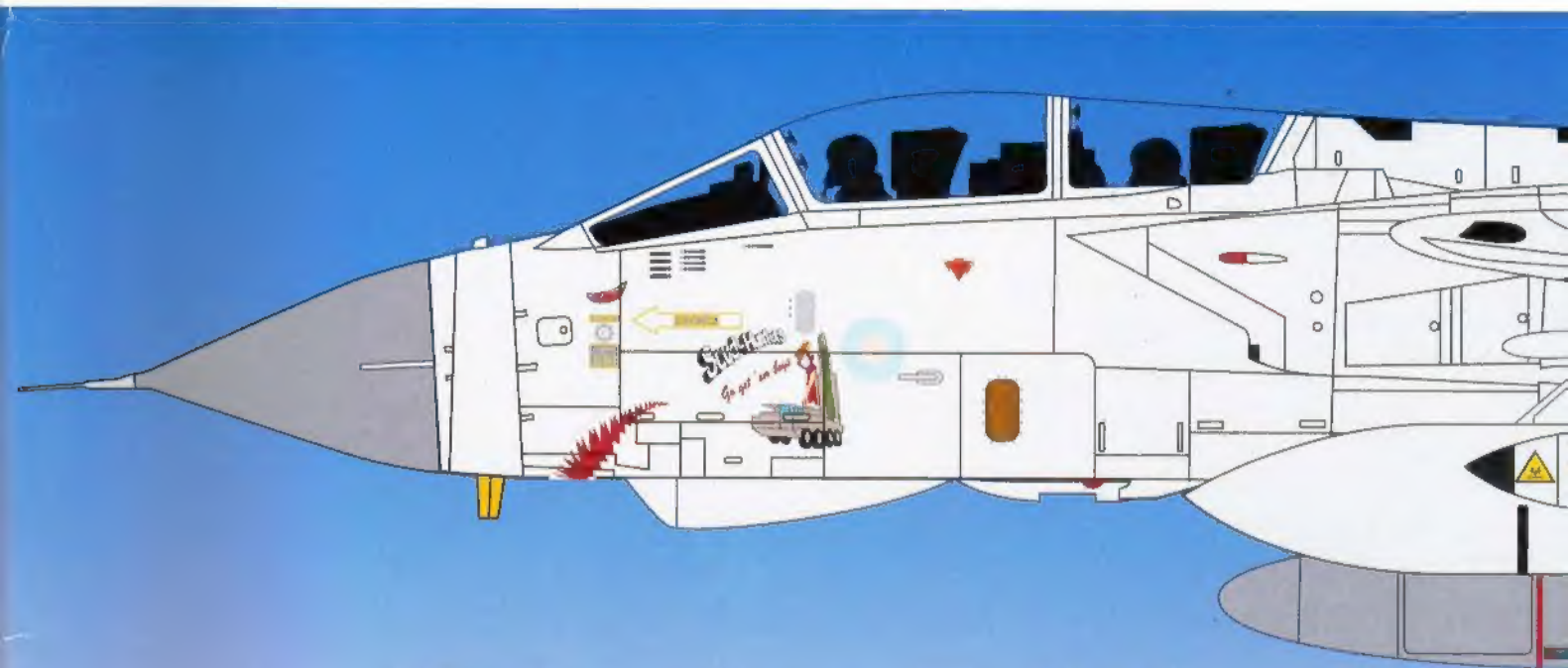


# ON TARGET

# SPECIAL No1



## **'Operation Telic'**

## **RAF Jets in Operation Iraqi Freedom**

by Andy Evans and Jon Freeman



**MODEL ALLIANCE**

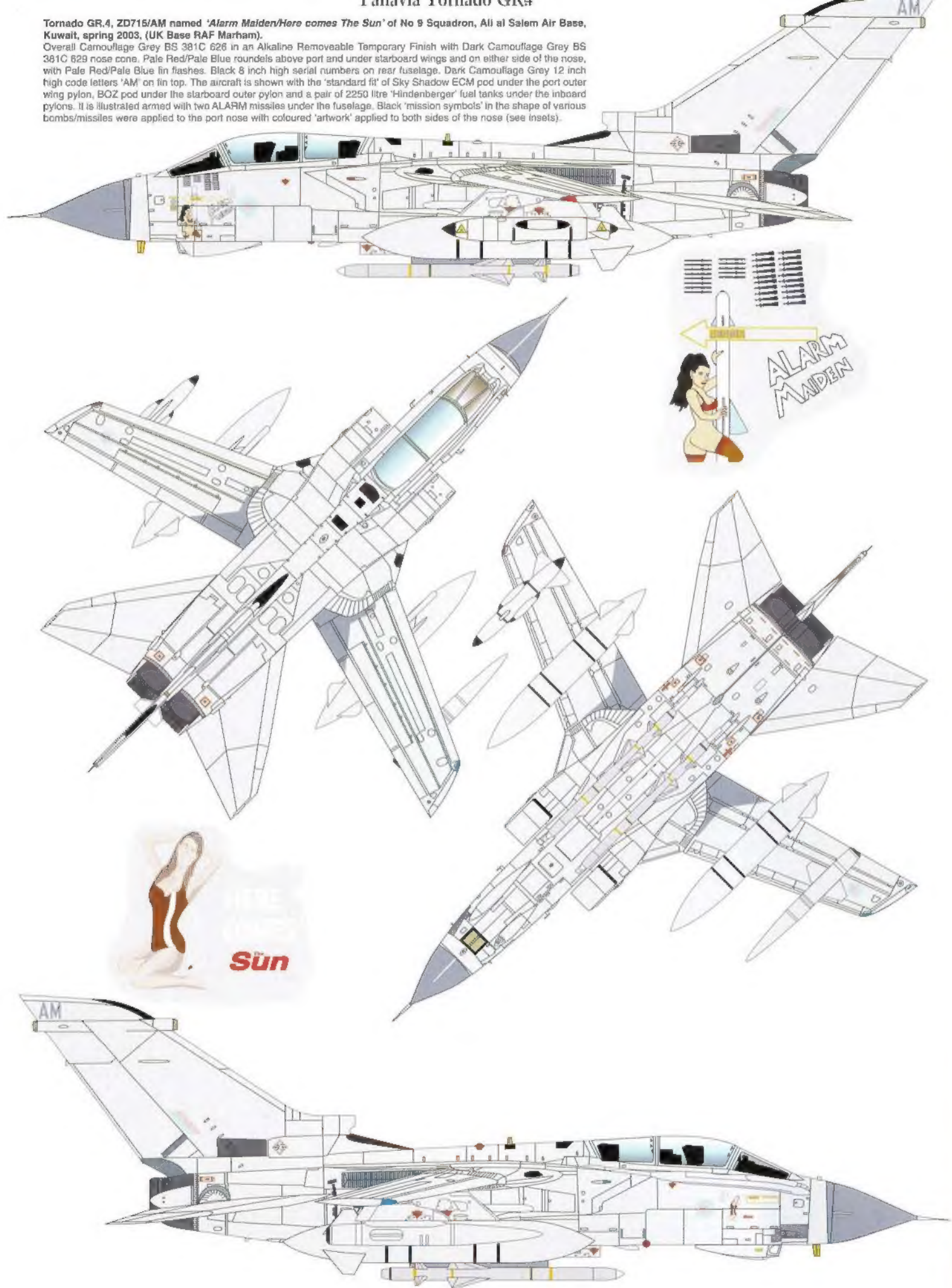
**DECAL SHEET DETAILS INSIDE**

ISBN 0-904643-04-3



Tornado GR.4, ZD715/AM named 'Alarm Maiden/Here comes The Sun' of No 9 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone, Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AM' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberg' fuel tanks under the inboard pylons. It is illustrated armed with two ALARM missiles under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose with coloured 'artwork' applied to both sides of the nose (see insets).



# 'Operation Telic'

## The colour schemes and markings of the RAF's jets in 'Operation Iraqi Freedom' text by Andy Evans - artwork by Jon Freeman

### Acknowledgements

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### Publisher's note:

Whilst every effort has been taken to ensure that all the details and illustrations in this book are as accurate as possible, the very nature of the subject - (ie very recent combat operations using current operational aircraft and weapons systems) - means that certain sensitive and/or classified information may not have been available to the author and/or artist at the time of publication. If any information, either adding to the sum of knowledge or correcting any errors, in this book comes to light in the future, we will publish it in our sister quarterly periodical 'AIRframe Journal'.

### On Target Special No 1

#### 'Operation Telic' The colour schemes and markings of the RAF's jets in 'Operation Iraqi Freedom'

text by Andy Evans  
artwork by Jon Freeman

published by

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On 6 February 2003, the UK Secretary of State for Defence, Geoff Hoon, announced the deployment of a force package comprising some 100 plus RAF aircraft to the Gulf region under the code name 'Operation Telic'. This action was taken in response to the growing concern over weapons of mass destruction within Iraq and the demands of the United States, Great Britain, Spain and other countries that the Iraqi leadership should abide by United Nations Resolution 1441. Aircraft from RAF stations at Marham, Leeming, Leuchars, Waddington, Cottesmore, Lyneham and Brize Norton were put on alert, aircraft were prepared and where deemed necessary repainted. Within days the first of these air assets departed to warmer climes.

The code word 'Telic' is derived from the Greek meaning 'purposeful' which is how the UK viewed its response, however one RAF quip explained that TELIC stood for 'Tell Everyone Leave Is Cancelled'. The RAF's contribution to 'Gulf War II' was quoted as being a 'balanced and highly capable force'. The fixed wing aircraft involved included Tornado GR.4s, Jaguar GR.3s and Harrier GR.7s providing the offensive and anti-radar capabilities; E-3D Sentry AWACS, Tornado GR.4As and Canberra PR.9s provided the dedicated reconnaissance platforms with recce pod-enabled Jaguar GR.3As and Harrier GR.7s also being available; ASRAAM armed Tornado F.3s provided air defence, although it is believed that the ALARM-modified Tornado EF.3 arrived just too late into Squadron service to be used over Iraq. Both VC10s and Tri-Stars were tasked with air-to-air refuelling, with transport being provided by the new C-17 Globemaster and the ubiquitous C-130 Hercules. The rotary element was provided by the Joint Helicopter Command who deployed some twenty-seven Puma and Chinook helicopters.

For this conflict, the RAF was much better prepared than in the previous Gulf War. Hard lessons had been learned in that first Gulf War of 1991, and even harder ones in the ensuing years; the 'classrooms' being in the skies over the Balkans and Kosovo. New weaponry had been procured, tactics had been changed and experiences with Northern and Southern Watch were embedded in to operational expectations. The RAF was practised at working in the inhospitable desert climate, rather than in Europe, and with only a few minor adjustments, the aircraft were ready for combat, with no hastily produced programmes or 'fixes' to get the aircraft to work in the harsh environment. Perhaps above all, this was a precision guided conflict, in all senses of the word, which has perhaps changed the face of aerial bombardment forever.

Andy Evans,  
Perton,  
June 2003

Front cover: Tornado GR.4A, ZA400/T 'Scud Hunters' of No 2 Squadron - in both artwork form by Jon Freeman and as a photograph of the real aeroplane. (Crown Copyright)

Below: No 9 Sqn pose in front of the CO's aircraft, ZD715/AM, 'Alam Maiden/Here comes The Sun', which is typical of the RAF Tornado GR.4s deployed to the Gulf in the spring of 2003. The artwork shown on the starboard nose depicts The Sun newspaper's Page 3 model, Nikkala, who was adopted as the squadron's 'pin up'! (Credit: Crown Copyright)



# Tornado GR.4 and GR.4A



The Tornado GR.4 and GR.4A aircraft deployed from RAF Marham were drawn from all of the RAF's home-based 'Tonka' units, from either RAF Marham or RAF Lossiemouth in Scotland. These aircraft left the UK on 10 February 2003 and were tasked to provide and support offensive air power as an Expeditionary Air Wing, (EAW), which also comprised Rapid Reaction Force Elements. As well as the operational Tornado squadrons, the EAW also maintained the Tactical IM-INT (Imagery Intelligence).

The upgraded Tornado GR.4/4A is a

**Heading:** A Marham-based Tornado GR.4, (squadron and serial unknown), prepares to leave its HAS for the Gulf. Note the overall light grey ARTF finish applied to all Tornado GR.4/4As and the TIALD pod under the fuselage. (Credit: Jamie Hunter)

**Right:** Air Launched Anti-Radiation Missiles (ALARMs) being loaded on to the under fuselage stations of a Tornado GR.4. (Credit: Crown Copyright)

**Below:** Rear Seat - sun covers added over the TV screens. (Credit: Neil Bannister)

**Below right:** One of the 'joy sticks' added to the rear cockpit framing. (Credit: Neil Bannister)

much more capable aircraft than the GR.1/1A used in the previous Gulf conflict and is truly 'all-weather day and night capable', featuring an internal FLIR, (Forward Looking Infra-Red), system complimenting its already powerful radar and laser targeting systems. The GR.4s are also armed with

the TIALD, (Thermal Image and Laser Designator), system carried on the under fuselage 'shoulder' pylons to allow the carriage of Laser Guided precision weapons such as the Paveway II, Paveway III and Enhanced Paveway. These weapons allow the aircraft to strike accurately with minimal error.



**Top:** A 'concrete' 1000lb LGB ready to be loaded. (Credit: Crown Copyright)

**Middle:** The latest in the recce systems for the RAF was the RAPTOR pod, shown here loaded beneath the fuselage centreline station of a GR.4A. (Credit: Crown Copyright)

**Bottom:** A Celcius Tech BOL fitted to a No 31 Squadron GR.4. (Credit: Neil Bannister)

Another weapon in the Tornado's armoury is the ALARM, (Air Launched Anti-Radiation Missile), which made its combat debut in the last Gulf War and is used to attack Surface-to-Air Missile sites. Also new to the inventory was the Storm Shadow cruise missile.

A few new 'mods' were added to the Tornados for operations in the Gulf, especially in the cockpit, in the shape of 'sun shades' for the TV Tabs and the addition of two small 'joysticks' attached to the canopy framing in the rear seat to help the Navigator to dispense chaff and flares whilst 'hanging-on' during aggressive manoeuvres! A few Tornados were also fitted with the Celcius Tech BOL chaff launchers - amongst those fitted were ZA589/DN, ZG794/F, ZG707/B and ZA592/BJ.

The Tornado GR.4A 'Recce-Jet' provided tactical reconnaissance using the TIRRS, (Tornado Infra-Red Recce System), and the new RAPTOR pod which enhances this capability to a real-time day and night scenario, with stand-off ranges of up to 50 miles. As well as being a specialist reconnaissance asset, the Tornado GR.4A also retains the full attack options of its 'mud-moving', (or perhaps 'sand-moving' in this case), GR.4 counterparts.

#### Colour scheme and markings

The Tornado GR.4s and GR.4As were re-painted in a new overall light grey ARTF, (Alkaline Removable Temporary Finish) scheme, called Camouflage

**Below:** ZA553/DI of No 31 Sqn., 'Dishy Intel', loaded with a pair of Storm Shadows, photographed prior to the application of her nose art. Note the darker grey 'band' to the rear of the nose cone - a feature found on many GR.4s. (Crown Copyright)





Above: A busy scene at Ali Al Salem Air base in Kuwait, as Tornados in their new overall light grey ARTF scheme, are prepared for war. (Credit: Crown Copyright)

Right: A Tornado is prepared inside the Marham paint shop. (Credit: Jamie Hunter)



Grey, (BS 381C 626 previously known as Barley Grey), which featured a Dark Camouflage Grey radome.

All the Tornados sported 'toned-down', Pale Red/Pale Blue roundels on either side of the nose, above the port and below the starboard wings and Pale Red/Pale Blue fin-flashes. No sign this time of the Camouflage Desert Sand scheme from the 1991 conflict! Serial numbers were black and fin codes were invariably in Dark Sea Grey.

This overall light grey ARTF scheme was first used on ZA559/AD in 'Operation Resinate South', which also featured white fuselage serial numbers and white fin codes - later changed to white serials and grey codes. On the

subject of codes and colours, some aircraft left Marham with white serials and white codes. These were later painted black and Dark Sea Grey respectively. The camouflage change it was reported, "was better suited to the Tornados current operating heights."

The Camouflage Desert Sand scheme of 1991 was designed for the ultra low-level runway denial role which was allocated to the RAF Tornado force during the last Gulf War. The latest overall light grey scheme is more appropriate for the medium and high altitude precision bombing role in which the GR.4 is now utilised. The detachment was initially split between Ali Al Salem in Kuwait and Al Udeid in Qatar, before the latter closed and all aircraft were located into Ali Al Salem, Kuwait.

#### New tools

When the 'shooting war' began, the RAF's Tornado GR.4 and GR.4As, (plus the Harrier GR.7s), bore the brunt of the

Left: All the 'Operation Telic' Tornado units were represented on this piece of crew tent 'HAS Art'! (Credit: Crown Copyright)



RAF's attack and close air support roles. In the 'first' Gulf War of 1991, the RAF surprised many observers by deploying brand new items of kit that were not actually in operational service with the 'peacetime forces'. Reference of course is made to the TIALD designator pod and the ALARM anti-radar missile. Both were rushed into service and proved a great success. In the recent 'Operation Iraqi Freedom', the RAF again pulled a 'bolt from the blue' by utilising the brand new Storm Shadow stand-off cruise missile against targets in Iraq.

Overnight on 21 March 2003, working alongside the USAF and USN, the RAF were heavily involved in the wide scale attacks against key targets, including Baghdad. One of these RAF raids featured the first operational use of Storm Shadow, successfully flown on Tornado GR.4s. The MoD describe the missile as being designed for long range, highly accurate, deep penetration attacks against enemy command and control bunkers. It is conventionally armed has a range of 250km flying just under the speed of sound.

The introduction of this new missile and the introduction of Enhanced GPS guided Paveway II/III bombs gives the Tornados fresh attack options that have seen the aircraft move away from the low-level, JP233 high-risk attacks it carried out in the 1991 Gulf War.

According to press reports, the dark grey coloured Storm Shadow missiles were delivered "in secret and under the cover of darkness" to Ali Al Salem Air Base in Kuwait. A pair of Storm Shadows are carried on the under fuselage 'shoulder' pylons of the aircraft involved.

On the first night of the war, the first wave of RAF aircraft involved were Tornado GR.4s from No 9 Squadron who launched from Ali Al Salem at 1700 GMT, carrying ALARM missiles. No 9's 'Boss', W/Cdr Derek Watson and his Navigator S/Ldr James Linton flew on these initial raids firing the new ALARM



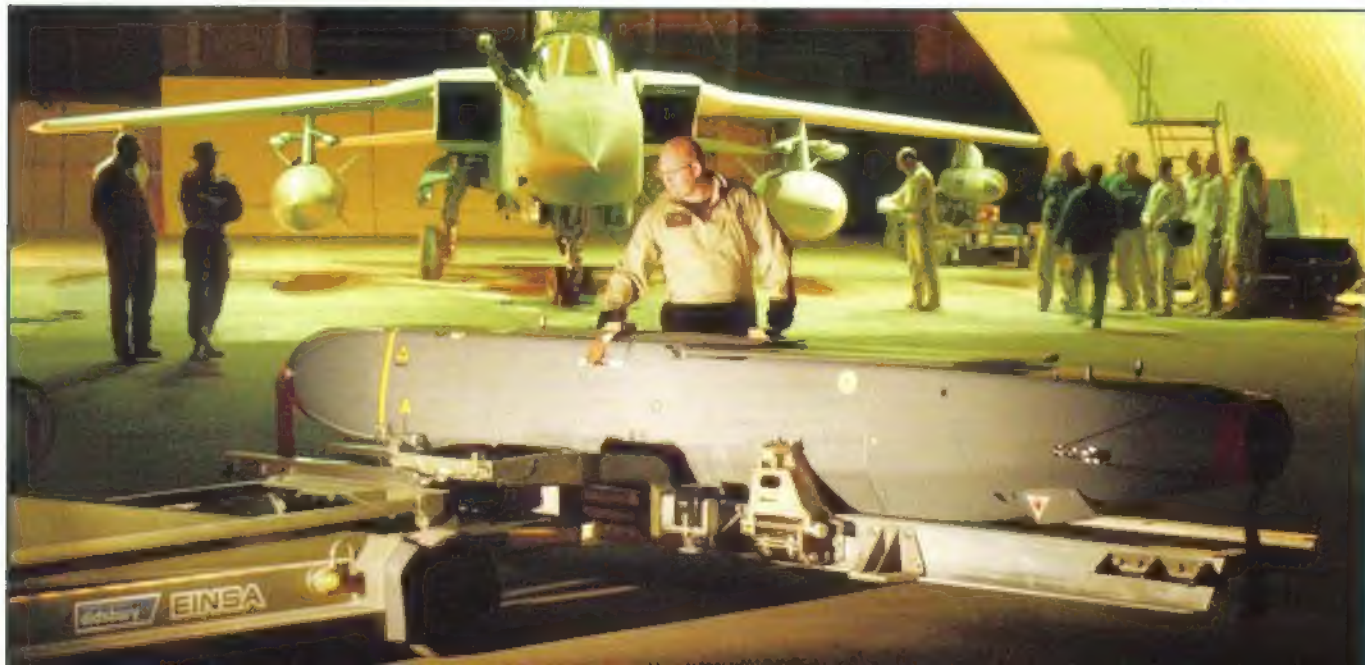
Mk 2 missiles for the first time. The unit continued its efforts throughout the war, and the Squadron motto of '*Per Nocturn Volamus*', (We Fly By Night), was certainly true, as amongst others, W/Cdr Watson amassed some twenty-five flying hours by night and ten by day!

They were followed by a second wave of Tornados carrying the new Storm Shadow cruise missile. The crews

Top: Tornado GR.4 of No 9 Sqn., with two ALARMS on the outer under fuselage stations and one each on the outboard rails of the inboard wing pylons.

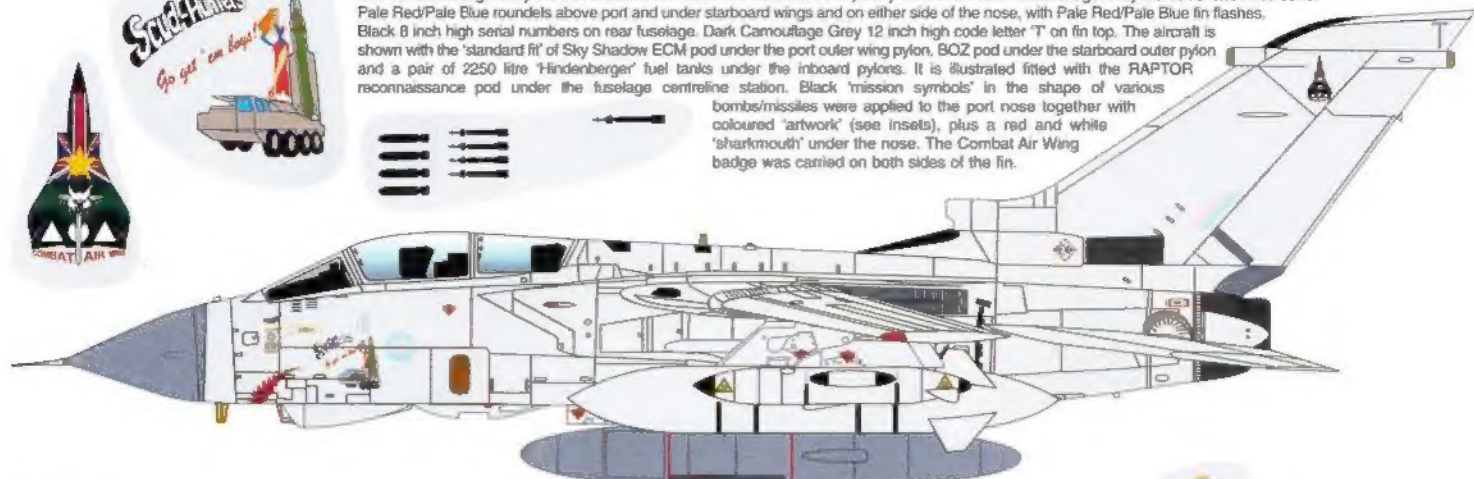
Above: Tornado GR.4, ZA600/AJL 'Hot Stuff' of No 617 Sqn., loaded with a pair of Storm Shadows. (Credit: Crown Copyright)

Below: Storm Shadows being loaded on to a Tornado GR.4. Storm Shadows were first launched on the night of 21 march 2003. (Credit: Crown Copyright)



Tornado GR4A, ZA400/T named 'Scud Busters/Go get 'em boys' of No 2 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'T' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated fitted with the RAPTOR reconnaissance pod under the fuselage centreline station. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' (see insets), plus a red and white 'sharkmouth' under the nose. The Combat Air Wing badge was carried on both sides of the fin.

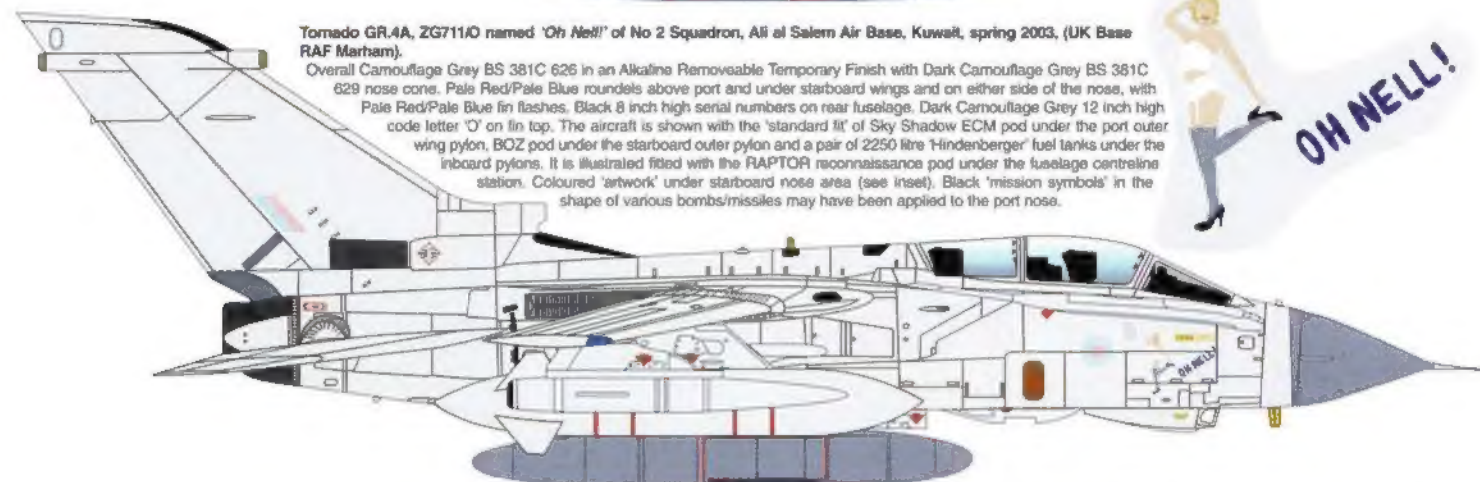


Tornado GR4A, ZG711/O named 'Oh Nell!' of No 2 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'O' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated fitted with the RAPTOR reconnaissance pod under the fuselage centreline station. Coloured 'artwork' under starboard nose area (see inset). Black 'mission symbols' in the shape of various bombs/missiles may have been applied to the port nose.



OH NELL!



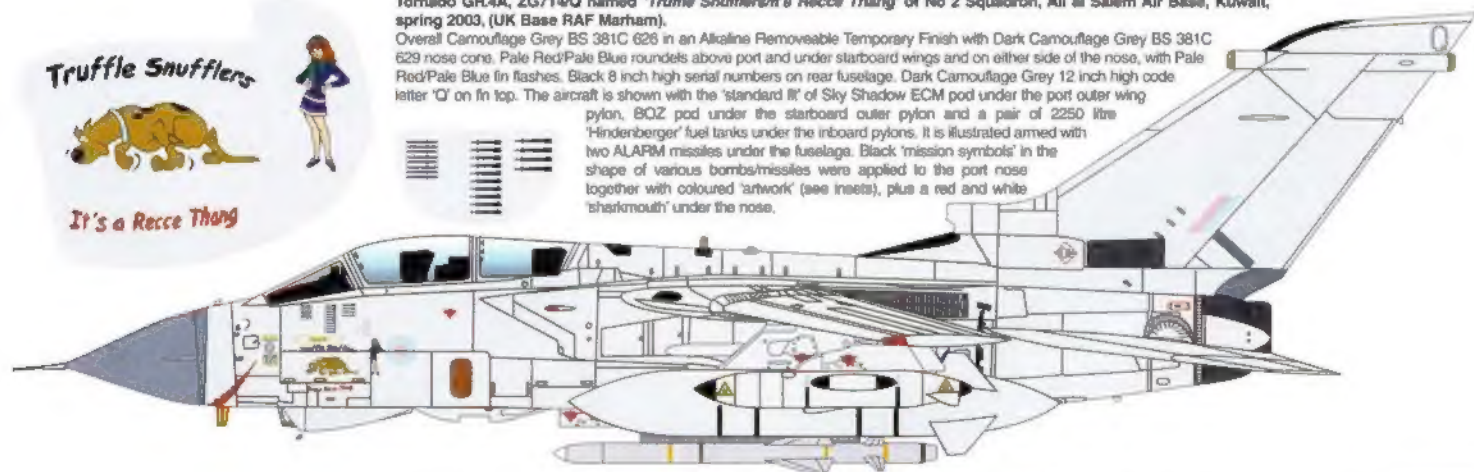
Tornado GR4A, ZG714/Q named 'Truffle Snufflers/t's Recce Thang' of No 2 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'Q' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two ALARM missiles under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' (see insets), plus a red and white 'sharkmouth' under the nose.

Truffle Snufflers



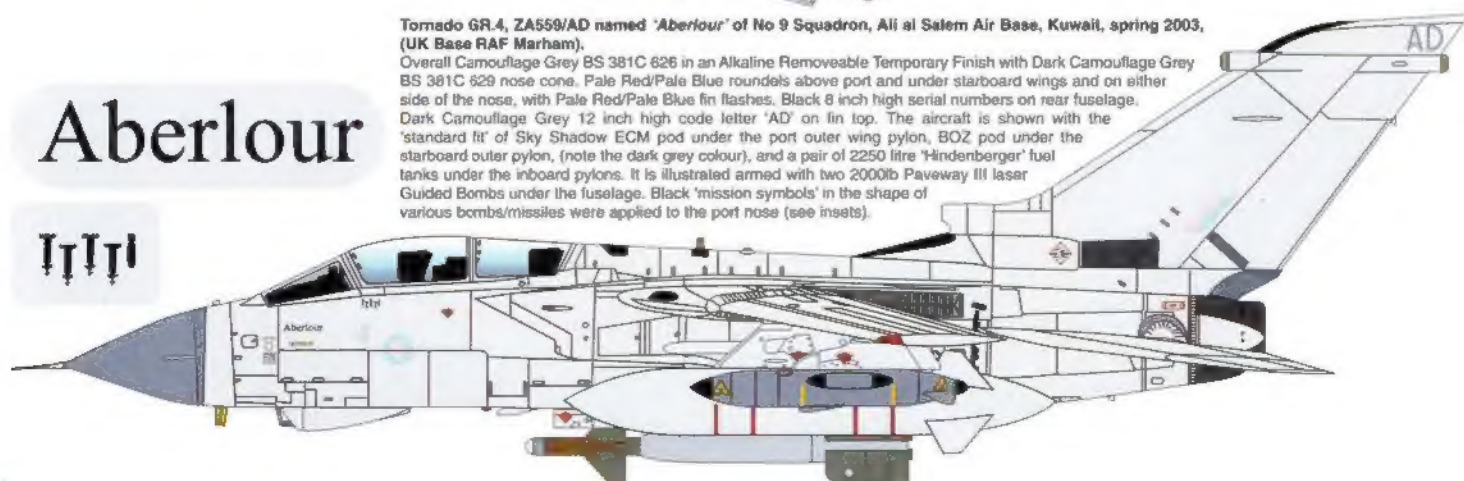
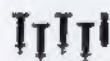
It's a Recce Thang



Tornado GR4, ZA559/AD named 'Aberlour' of No 9 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'AD' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon, (note the dark grey colour), and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 2000lb Paveway III laser Guided Bombs under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose (see insets).

Aberlour



# Panavia Tornado GR4/GR4A

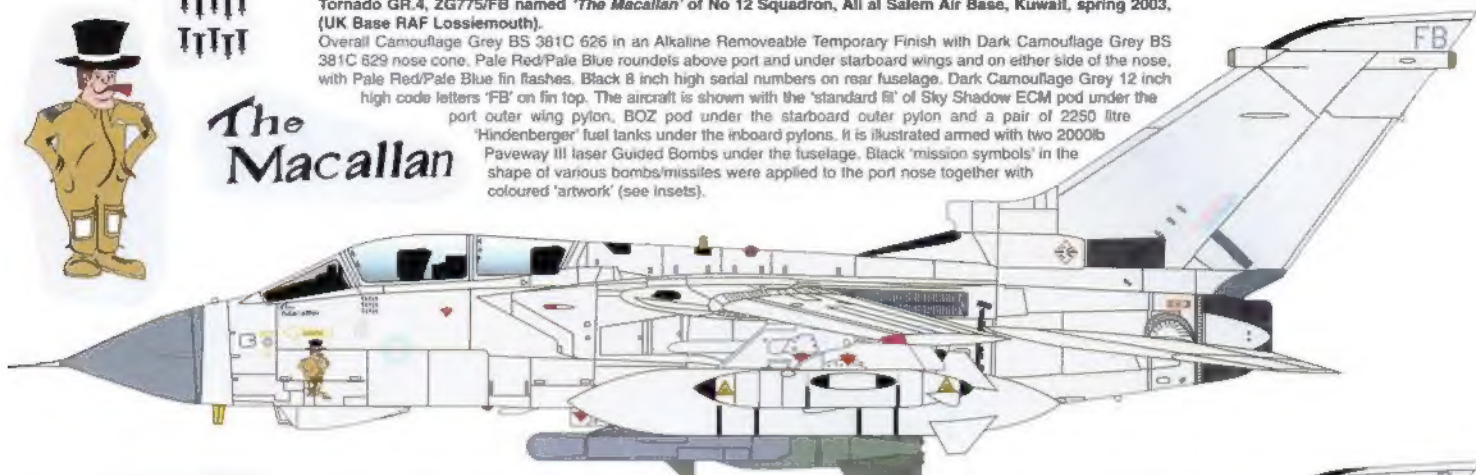
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## The Macallan

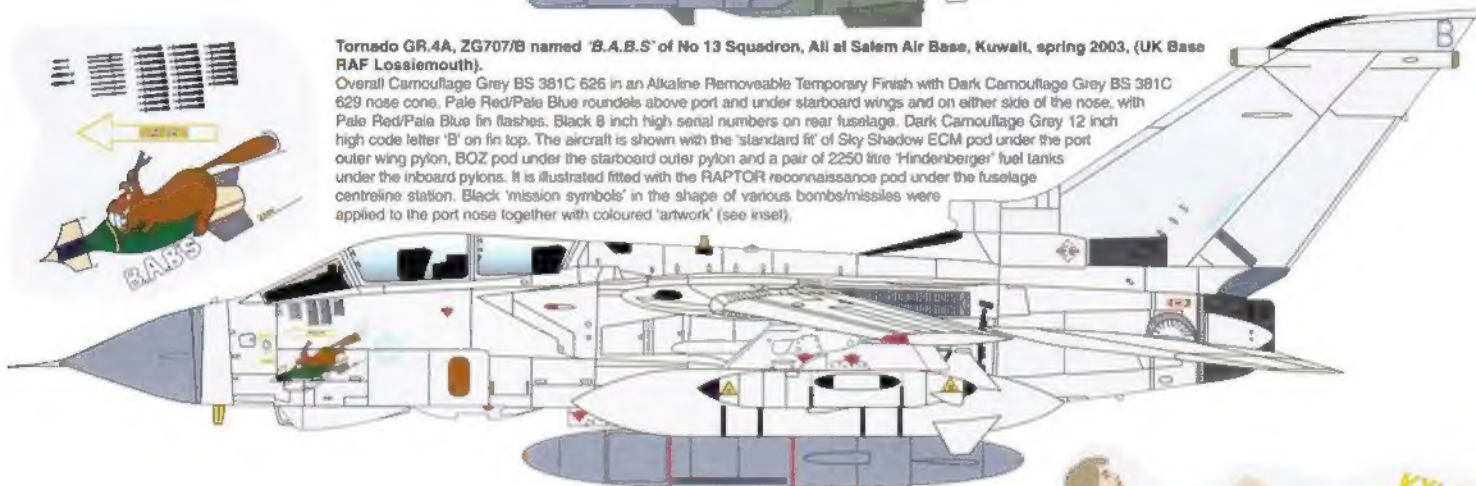
Tornado GR.4, ZG775/FB named 'The Macallan' of No 12 Squadron, All at Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'FB' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 2000lb Paveway III laser Guided Bombs under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' (see insets).



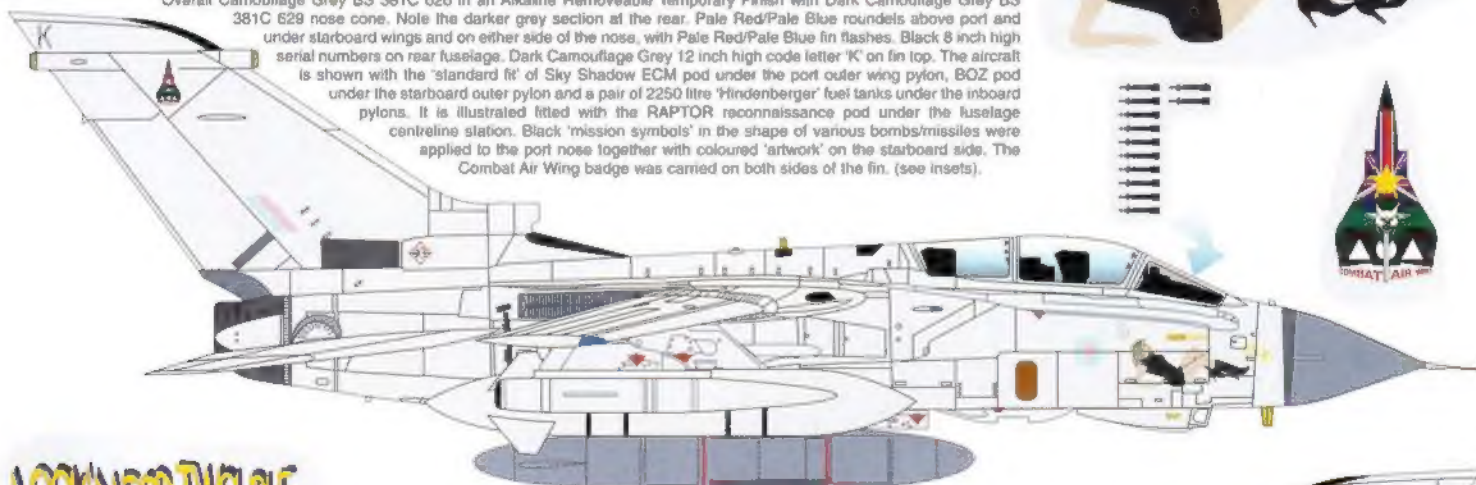
Tornado GR.4A, ZG707/B named 'B.A.B.S.' of No 13 Squadron, All at Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'B' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated fitted with the RAPTOR reconnaissance pod under the fuselage centreline station. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' (see inset).



Tornado GR.4A, ZG726/K named 'Kylie' of No 13 Squadron, All at Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the darker grey section at the rear. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'K' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated fitted with the RAPTOR reconnaissance pod under the fuselage centreline station. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' on the starboard side. The Combat Air Wing badge was carried on both sides of the fin. (see insets).

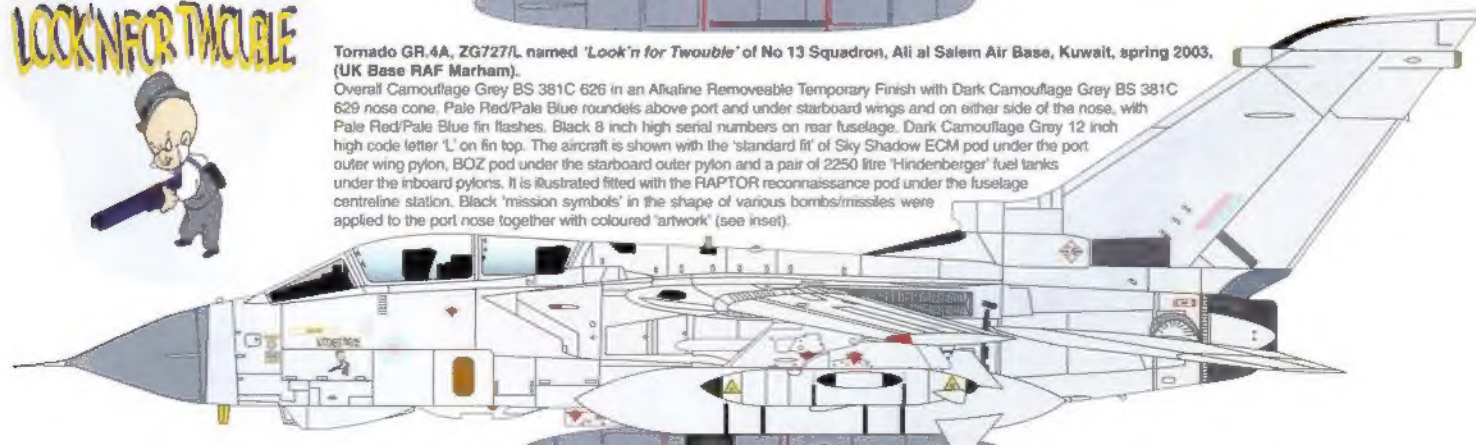


## LOOK'N FOR TROUBLE



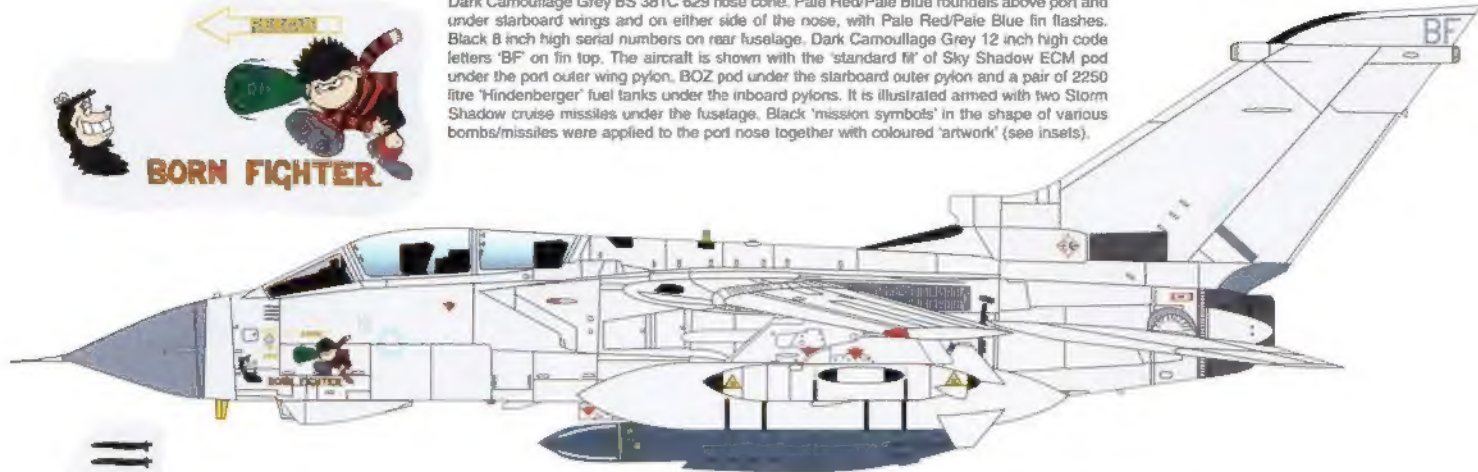
Tornado GR.4A, ZG727/L named 'Look'n for Trouble' of No 13 Squadron, All at Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'L' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated fitted with the RAPTOR reconnaissance pod under the fuselage centreline station. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' (see inset).



Tornado GR.4, ZA554/BF named 'Born Fighter' of No 14 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'BF' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two Storm Shadow cruise missiles under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork' (see insets).

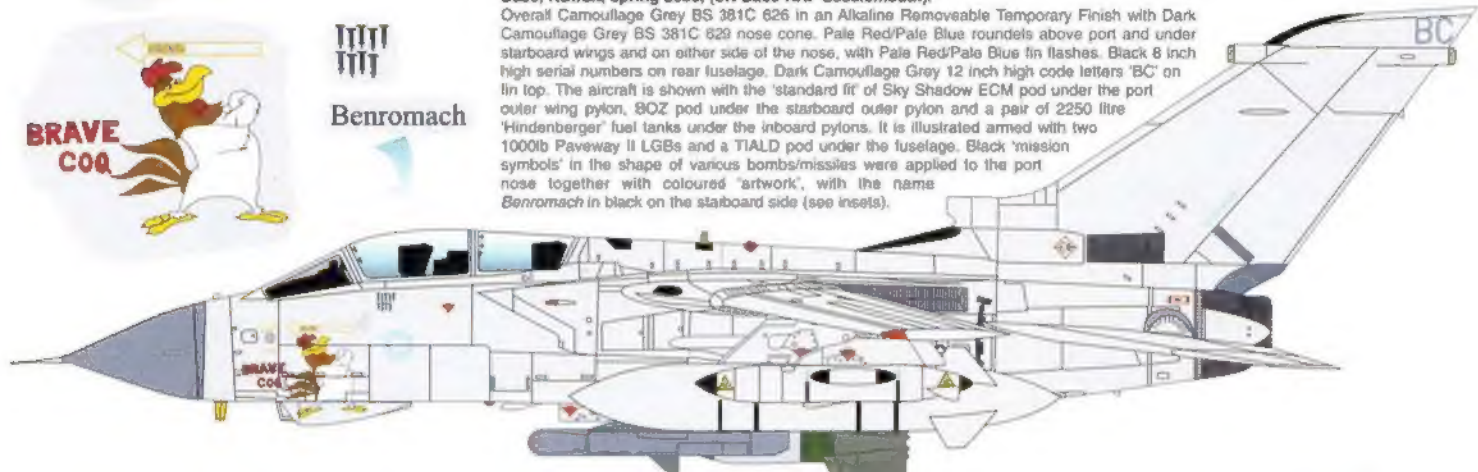


Tornado GR.4, ZA560/BC named 'Brave Coq/Benromach' of No 14 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'BC' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles were applied to the port nose together with coloured 'artwork', with the name Benromach in black on the starboard side (see insets).

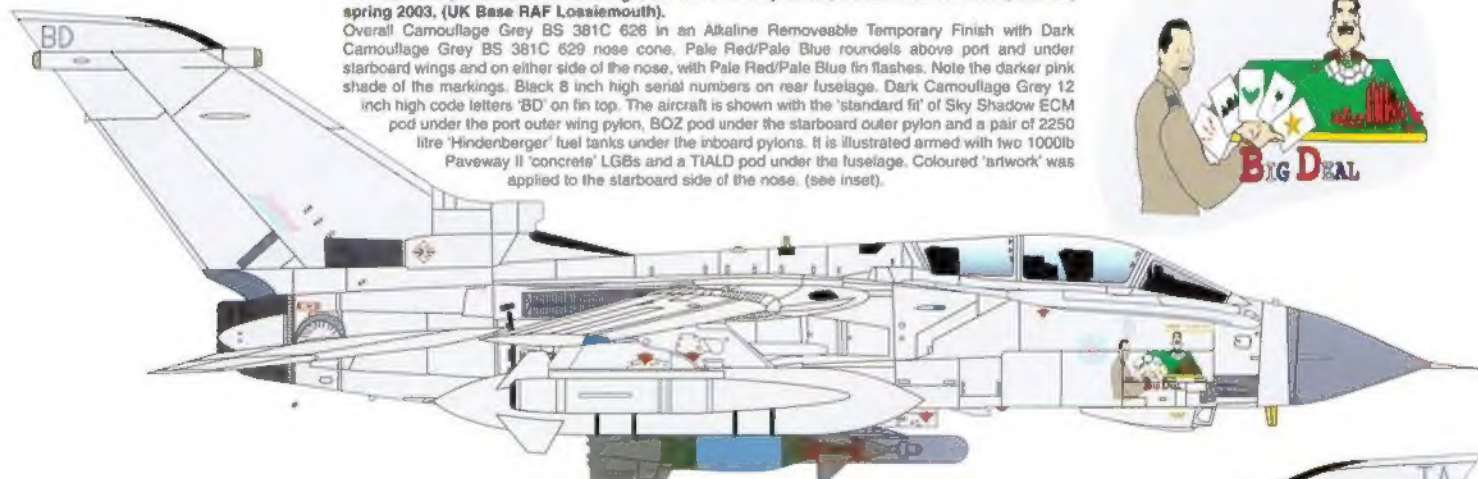


Benromach



Tornado GR.4, ZA606/BD named 'Big Deal' of No 14 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

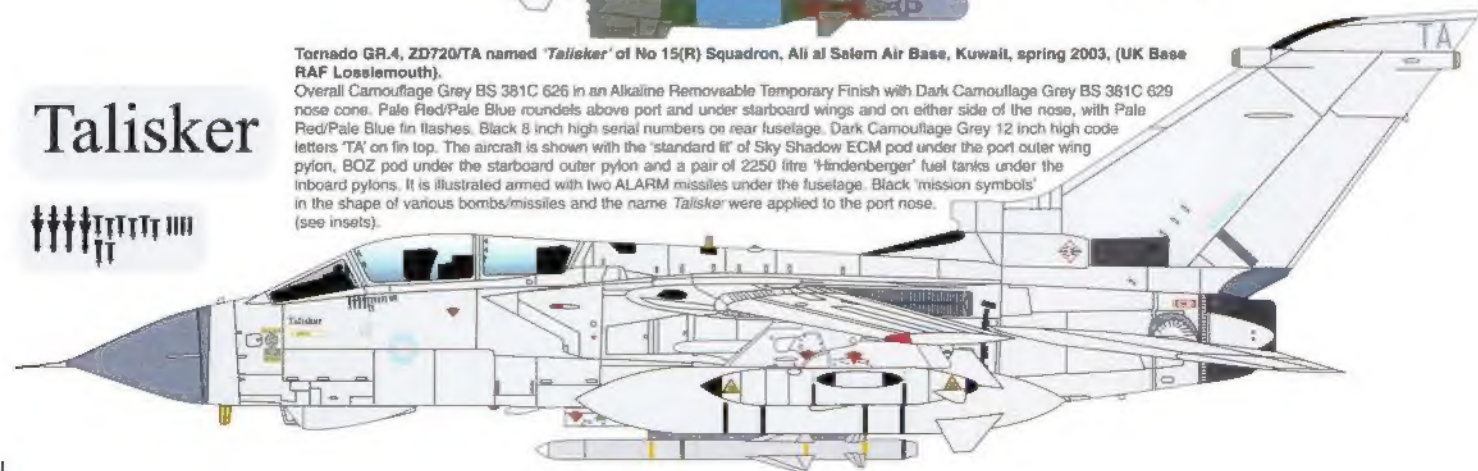
Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Note the darker pink shade of the markings. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'BD' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II 'concrete' LGBs and a TIALD pod under the fuselage. Coloured 'artwork' was applied to the starboard side of the nose. (see inset).



Tornado GR.4, ZD720/TA named 'Talisker' of No 15(R) Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'TA' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two ALARM missiles under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles and the name Talisker were applied to the port nose. (see insets).

Talisker

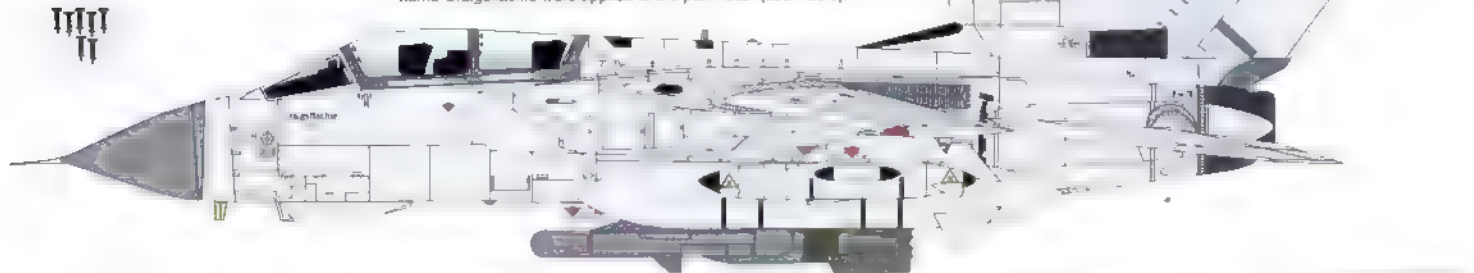


## Panavia Tornado GR4/GR4A

### Craigellachie

Tornado GR.4, ZG777/TC named 'Craigellachie' of No 15(R) Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

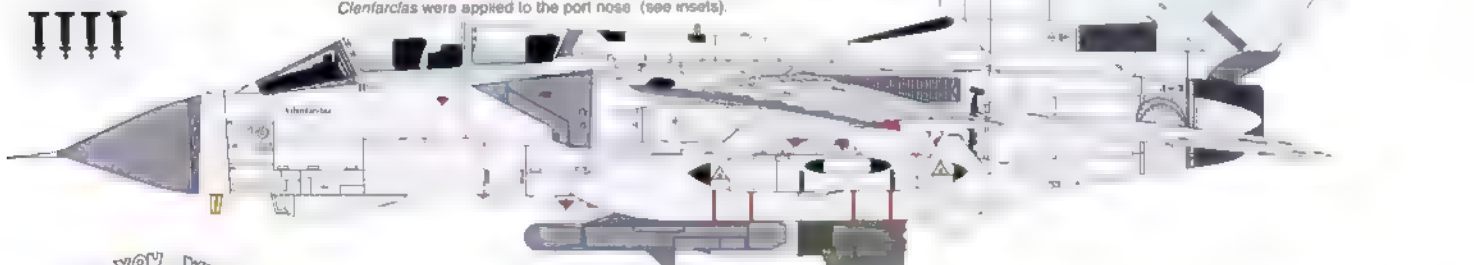
Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the replacement Dark Sea Grey port intake panelling. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'TC' on fin top. The aircraft is shown with the standard fit of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberg' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. Black 'mission symbols' in the shape of LGBs and the name *Craigellachie* were applied to the port nose (see insets).



Tornado GR.4, ZG794/F named 'Glenfarclas' of No 15(R) Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

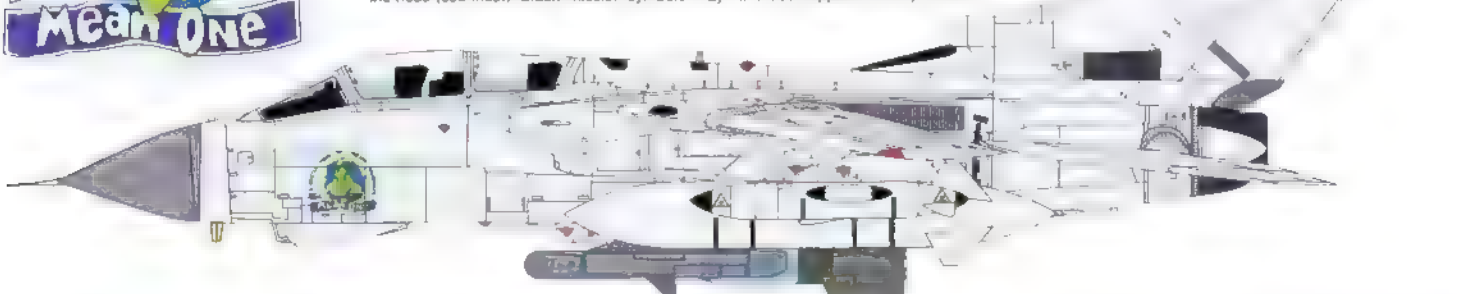
Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the replacement Dark Sea Grey port intake panelling. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letter 'F' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberg' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. Black 'mission symbols' in the shape of LGBs and the name *Glenfarclas* were applied to the port nose (see insets).

### Glenfarclas



Tornado GR.4, ZA458/DG named 'Mean One/It's a Grinch thing you wouldn't understand!' of No 31 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

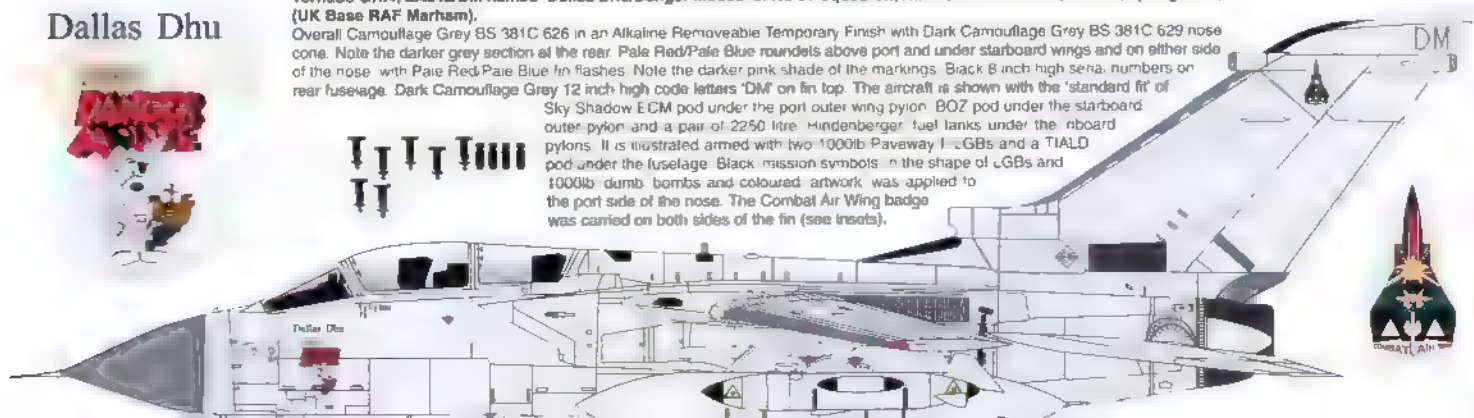
Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the replacement Dark Sea Grey port intake panelling. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Note the darker pink shade of the markings. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'DG' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberg' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. Coloured 'artwork' was applied to the port side of the nose (see inset). Black 'mission symbols' may have been applied to the port nose.



### Dallas Dhu

Tornado GR.4, ZA542/DM named 'Dallas Dhu/Danger Mouse' of No 31 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the darker grey section at the rear. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Note the darker pink shade of the markings. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'DM' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberg' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. Black 'mission symbols' in the shape of LGBs and 1000lb dumb bombs and coloured artwork was applied to the port side of the nose. The Combat Air Wing badge was carried on both sides of the fin (see insets).

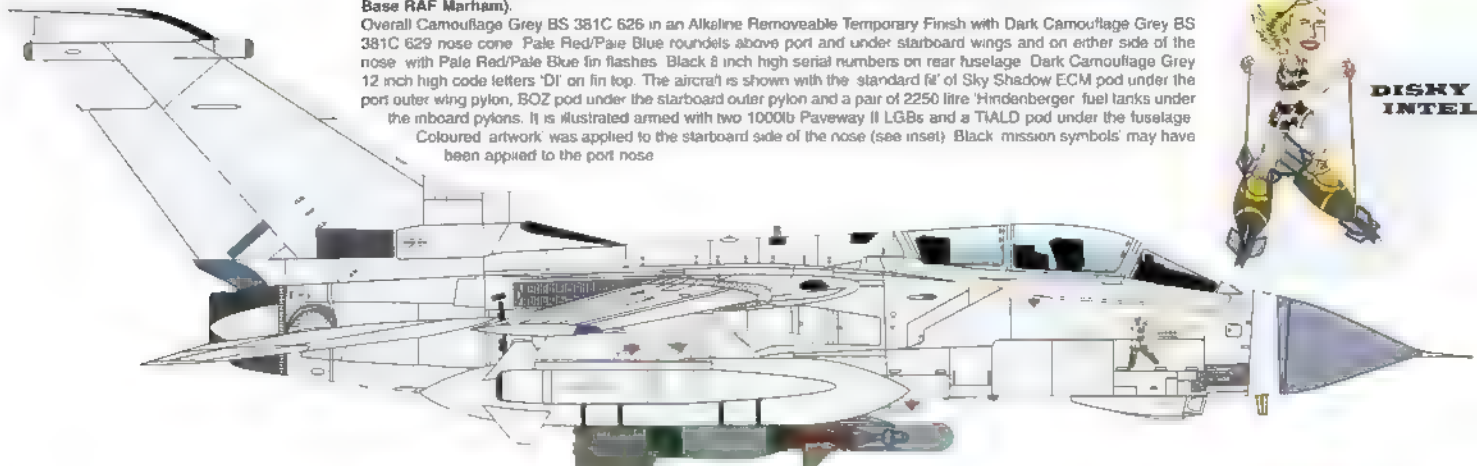


Tornado GR.4, ZA553/DI named 'Disky Intel' of No 31 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'DI' on fin top. The aircraft is shown with the standard fit of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. Coloured artwork was applied to the starboard side of the nose (see inset). Black mission symbols may have been applied to the port nose.



DISKY  
INTEL

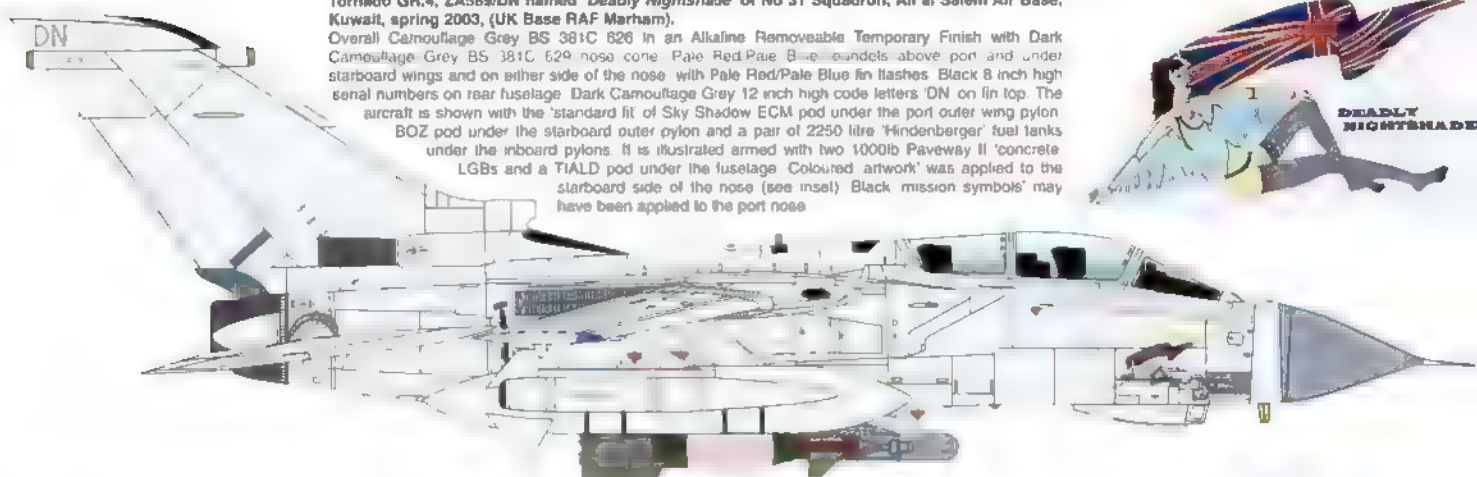


Tornado GR.4, ZA569/DN named 'Deadly Nightshade' of No 31 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'DN' on fin top. The aircraft is shown with the standard fit of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II 'concrete' LGBs and a TIALD pod under the fuselage. Coloured artwork was applied to the starboard side of the nose (see inset). Black mission symbols may have been applied to the port nose.



DEADLY  
NIGHTSHADE

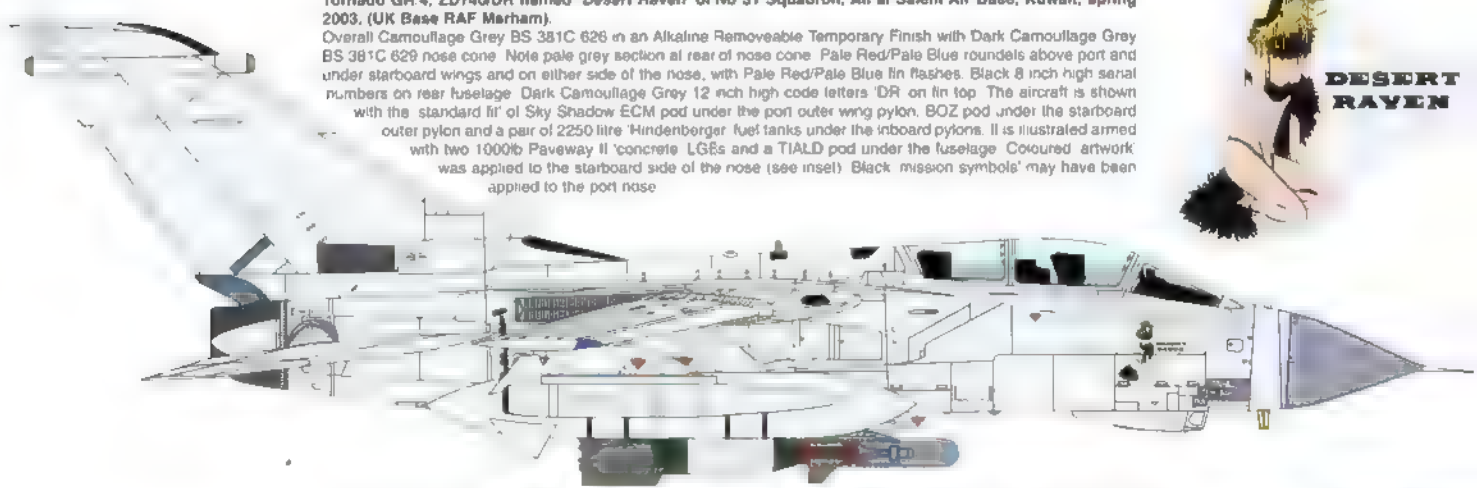


Tornado GR.4, ZD740/DR named 'Desert Raven' of No 31 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note pale grey section at rear of nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'DR' on fin top. The aircraft is shown with the standard fit of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II 'concrete' LGBs and a TIALD pod under the fuselage. Coloured artwork was applied to the starboard side of the nose (see inset). Black mission symbols may have been applied to the port nose.



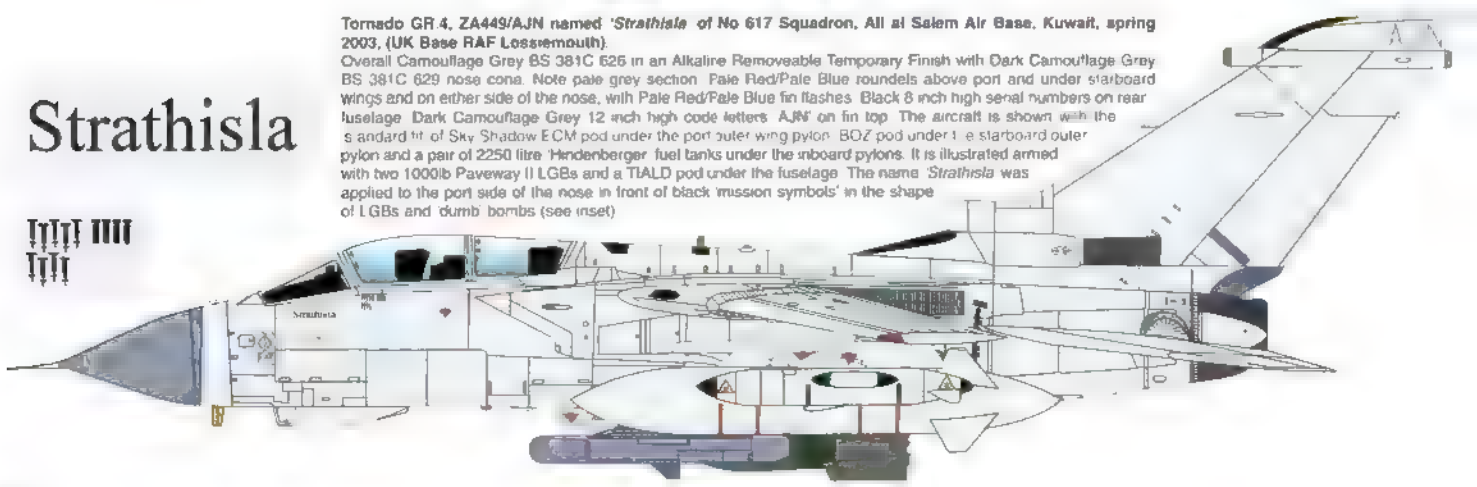
DESERT  
RAVEN



Tornado GR.4, ZA449/AJN named 'Strathisla' of No 617 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).

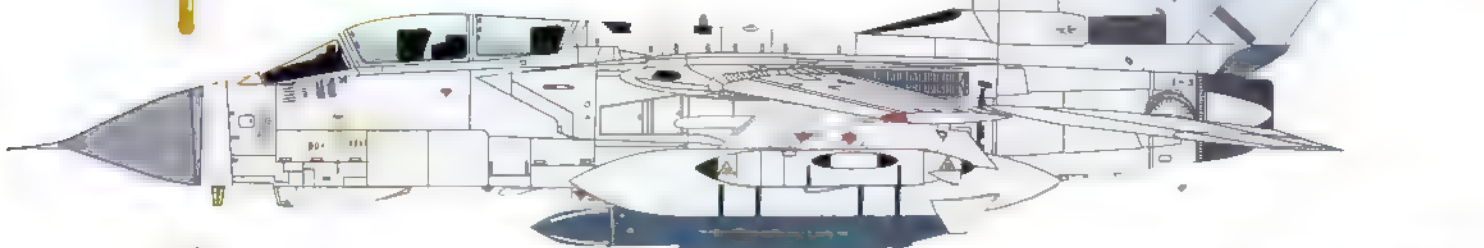
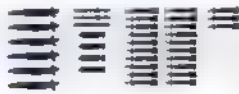
Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note pale grey section at rear of nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AJN' on fin top. The aircraft is shown with the standard fit of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage. The name 'Strathisla' was applied to the port side of the nose in front of black mission symbols in the shape of LGBs and dumb bombs (see inset).

## Strathisla

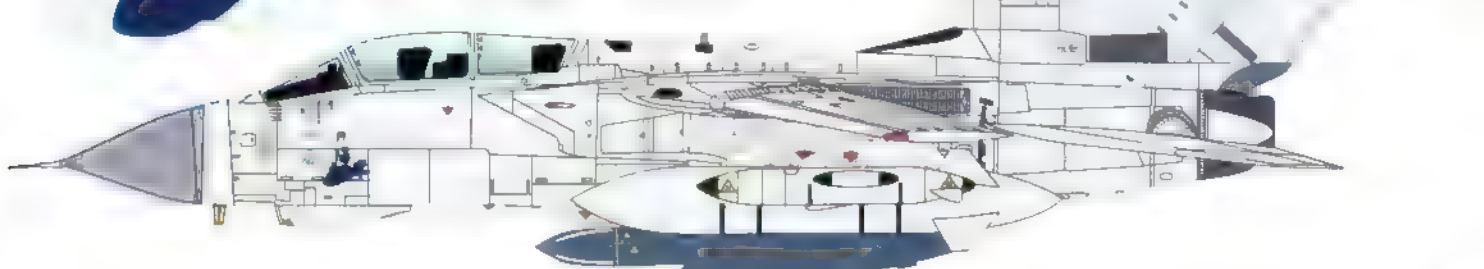
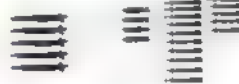


## Panavia Tornado GR.4/GR.4A

Tornado GR.4, ZA600/AJL named *'Hot Stuff'* of No 617 Squadron, Al Ujain Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth). Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AJL' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two Storm Shadow cruise missiles under the fuselage. Black mission symbols in the shape of various bombs/missiles were applied to the port nose together with coloured artwork (see insets).

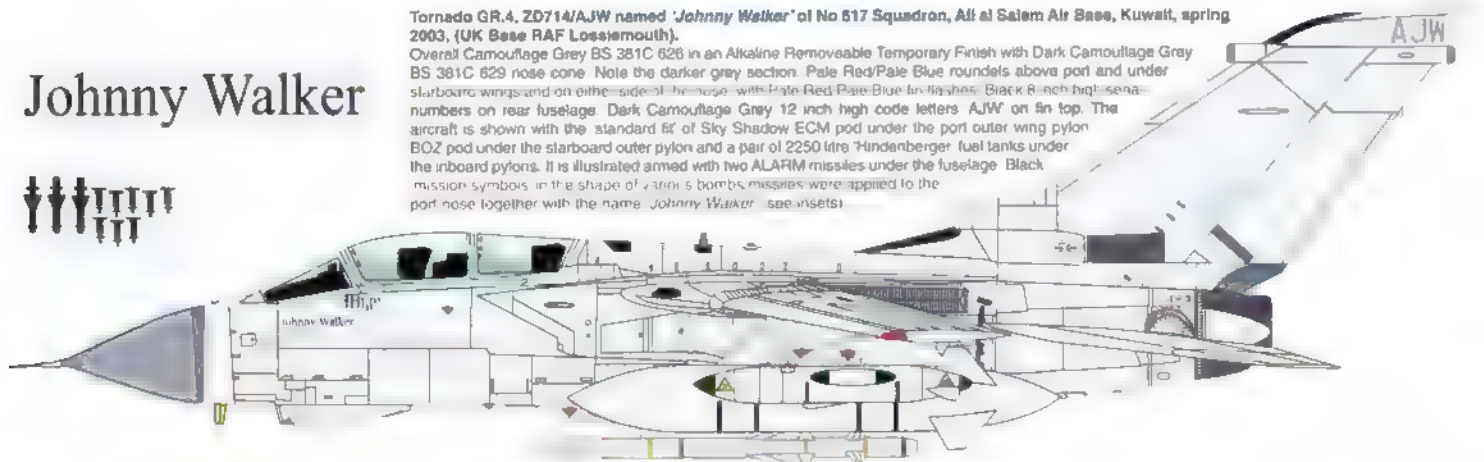


Tornado GR.4, ZA614/AJJ named *'It's Show Time'* of No 617 Squadron, Al Ujain Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth). Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AJJ' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two Storm Shadow cruise missiles under the fuselage. Black mission symbols in the shape of various bombs/missiles were applied to the port nose together with coloured artwork (see insets).



Tornado GR.4, ZD714/AJW named *'Johnny Walker'* of No 617 Squadron, Al Ujain Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth). Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the darker grey section. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AJW' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. It is illustrated armed with two ALARM missiles under the fuselage. Black mission symbols in the shape of various bombs/missiles were applied to the port nose together with the name 'Johnny Walker' (see insets).

### Johnny Walker



Tornado GR.4, ZD850/AJT named *'Rect's Controllers Dream/Op Telic 2003/The glory is in the giving'* of No 617 Squadron, Al Ujain Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth). Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Note the lighter grey section. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AJT' on fin top. The aircraft is shown with just the Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberger' fuel tanks under the inboard pylons. ZD850 did not carry any mission symbols and appears to have been somewhat of a 'hangar queen' hence 'The glory is in the giving' legend. She was also photographed with the short-lived temporary name/artwork 'Show Time', (not to be confused with ZA614/AJJ above), with three red lightning flashes on the fin. Coloured Christmas Tree artwork was applied to the port nose area with a small black time bomb just under the windscreen sill (see insets).





and aircraft chosen for the initial Storm Shadow mission came from the Lossiemouth-based No 617 Sqn, the famous 'Dambusters', who were taking part in what W/Cdr Dave Robertson, called, "an historic mission," on the 60th Anniversary of the squadron's formation.

During the operation, two Tornados came under Iraqi missile attack and one had to ditch its 2250 litre fuel tanks so it could evade a surface to air missile and by the time it had reached its base, it had virtually run out of fuel!

The Storm Shadow missile was not due to enter service until later 2003, although the squadron had been running test flights with dummies. The RAF stated that it was untried in an operational environment, and was a 'hearts in mouth operation' as they had never flown with the real thing and had no idea how well it would work.

The Tornados of No 617 Squadron took off with Storm Shadows at the beginning of the aerial bombardment of Baghdad. But soon after crossing the border into Iraq, a Tornado flown by pilot S/Ldr 'Noddy' Knowles and navigator F/Lt Andy Turk, was locked-up by a

surface-to-air missile and was also forced to ditch its fuel tanks. G/C Simon Dobb the Detachment Commander explained, "We were flying to targets north of Baghdad. Storm Shadows are heavy at nearly 1,350kg each, and we use more fuel. Noddy and Andy were fuel critical so we let them go in first to fire their missiles and return home. Then, as we entered our attack run, we too came under missile attack. We were targeted by what I think was an Iraqi SA2 missile."

He and pilot, S/Ldr Andy Myers, had to take evasive action before continuing with their mission. "Looking back I can say I was nervous. And I was excited, not in a joyful sense, but because I knew we were making history."

The Storm Shadow missile is derived from the French 'Apache' Anti-Runway missile and a number of key elements of this proven technology have been retained for Storm Shadow, as well as improvements such as the addition of a new guidance and navigation based on TERPROM (TERrain PROfile Matching), an integrated GPS; Terminal Guidance using imaging infra-red sensor and

autonomous target recognition system and a BROACH, (Bomb Royal Ordnance Augmented Charge), unitary warhead. The missile weighs approximately 1,350 kilograms and is just over five metres long. Its maximum diameter is less than one metre, and with its wings deployed, under three metres.

As with any aircraft involved in 'Operation Iraqi Freedom', the first phase of the Mission Planning ensures that the missile navigates to the target with maximum accuracy. The user Squadron prepares the mission data file with the pre-planned data, together with the latest operational intelligence. Once airborne the Tornado fires Storm Shadow, (at a currently undisclosed range), the missile's wings deploy and its own engine and systems take control.

On approaching the Target Phase,

**Top: *Per Nocturn Volamus* (We Fly By Night) - a Tornado GR.4 being readied for a nocturnal foray. (Credit: Crown Copyright)**

**Below: W/Cdr Dave Robertson and S/Ldr Andy Myers taxi out of the protective shelter in GR 4, ZA607/AB - (prior to the application of the nose art) - armed with a pair of Storm Shadows. (Credit: Crown Copyright)**



Right: Carrying a TIALD pod and two 1000lb LGBs this GR.4 is in-flight refuelling from a USAF KC-10. (Credit: Crown Copyright)

Below right: Armed with four RBL755 cluster bombs a GR 4A takes on fuel. (Credit: Crown Copyright)

Bottom right: Pre-artwork Tornado GR 4, ZA607/AB, 'Delightful Debs/Make All Sure' complete with RAPTOR pod on approach to land at Ali Al Salem. (Credit: Crown Copyright)

Bottom left: Head-on view of a 1000lb Paveway II Laser Guided Bomb carrying Tornado GR.4. Many Tornado GR.4 missions were flown with two 1000lb LGBs on the centre and the starboard fuselage station and a TIALD pod on the port fuselage station. The centreline mounted LGB was positioned to the rear of the starboard one to give clearance to the forward fins and the gimbal mounted seeker head. (Credit: Crown Copyright)

the missile will initiate a pre-selected 'bunt' manoeuvre to obtain the best combination of acquisition probability and lethality against the target. As the missile climbs, it jettisons its nose cover, which then enables the missile's high resolution imaging infra-red sensor to view the target area ahead. An image processor compares the actual image features with a reference set of features, determined during Mission Planning.

When a 'feature match' is achieved the target will be acquired and the required aim point selected, tracked and used as the reference for the missile terminal guidance. As the missile closes in on the target the acquisition process will be repeated with a higher resolution data set to refine the aim point.

When engaging hard targets, such as Hardened Aircraft Shelters or bunkers, the missile will strike the target at the optimum dive angle, selected during Mission Planning. On impact, a precursor charge will perforate the target structure, and any soil covering, and the follow-through penetrator warhead will continue to penetrate inside the target to be detonated after a pre-selectable fuse delay. Should the mission be against a target with potential high collateral damage, the



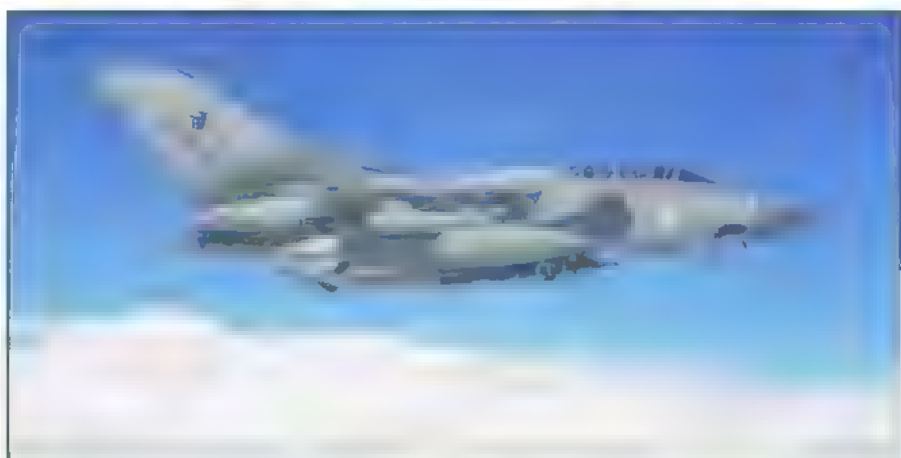


Above: An unidentified ALARM-armed Tornado GR.4 taking off from Ali Al Salem Air Base. (Credit: Crown Copyright)

Right: Tornado GR.4, ZA553/DI 'Dishy Intel' of No 31 Sqn., armed with a pair of Paveway III 2000lb LGBs. (Credit: Crown Copyright)

Below right: Tornado GR.4A, carrying the latest in the recce systems for the RAF, the RAPTOR pod, on the port under fuselage station. (Credit: Crown Copyright)

Below: A Tornado GR.4A being readied for another mission. Note the FLIR and LRMTS fairings under the nose and the extended in-flight refuelling probe. (Credit: Crown Copyright)



**Whisky Galore! Several machines did not have 'nose art' as such applied and were simply given names - after famous brands of Scottish Whisky! From top to bottom:-**

- ZA449/AJN 'Strathisla' of No 617 Sqn. Note the manner in which the mission symbols are painted. (Credit: Campbell Andrews)
- ZG777/TC 'Craigellachie' of No 15(R) Sqn. (Credit: Campbell Andrews)
- ZA559/AD 'Aberlour' of No 9 Sqn. (Credit: Campbell Andrews)
- ZD793/TB 'Tamdhu' of No 15(R) Sqn. (Credit: Campbell Andrews)

cont'd overleaf.....

mission can be aborted if the target identification and acquisition process is unsuccessful. In this case the missile will fly to a predetermined crash site.

In addition to the high-tech laser guider GPS-aided Paveway III bombs carried by the Tornado, consideration was given to using weapons at the other end of the spectrum. Far removed from the £750,000 Storm Shadow rounds came the most extreme use of 'precision guided inert munitions' so far recorded. These weapons are basically laser-guided 1,000lb blocks of concrete shaped as bombs and painted blue to identify them as non-explosive if they are discovered still intact!

Each of these concrete shaped bombs, dropped from height and with great accuracy, can destroy a tank without affecting surrounding buildings. There is the impact, but without causing a devastating explosion that would put civilians at risk and shatter surrounding buildings. They still have the guidance and steering methods of other high explosive weapons but the risk of causing civilian casualties is considerably reduced.

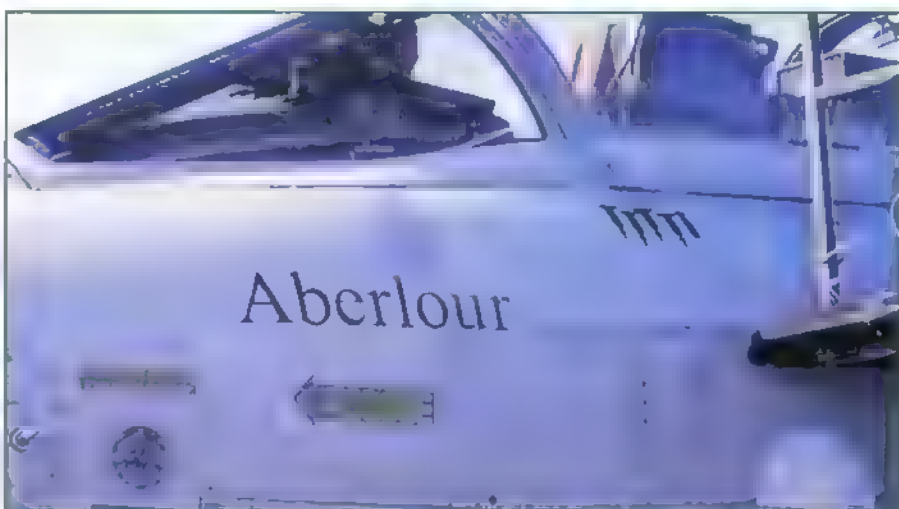
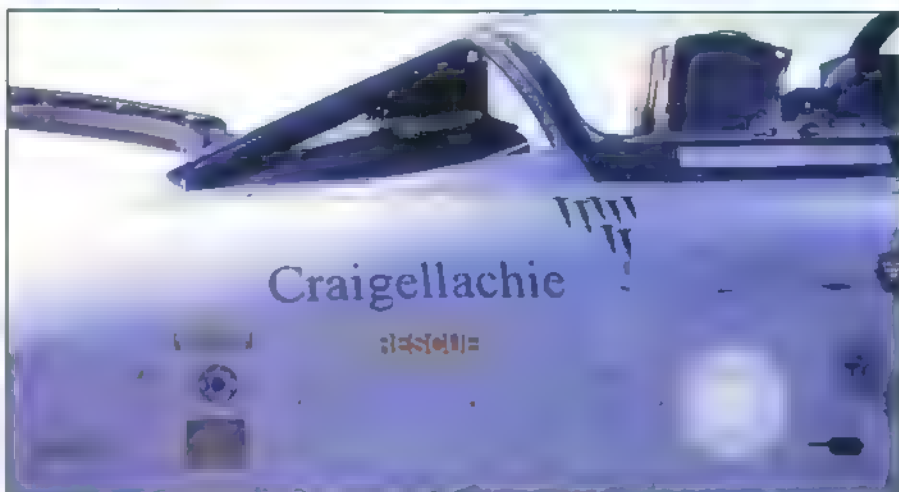
#### Blue on Blue

It is always sad to report the loss of an aircraft in a combat zone, but even sadder to report on one shot down by so-called 'Friendly Fire'. The incident happened on 22 March, when a US Patriot missile battery shot down an RAF Tornado GR.4 which was returning to its base in Kuwait. The incident claimed the lives of both crew when the RAF jet was mistaken for an incoming Iraqi missile.

W/Cdr Derek Watson was in the lead Tornado as the pair returned from strikes in Iraq. He spotted the missile and took evasive action firing off chaff and flares to distract the round. He saw the missile speed over his canopy and yelled out a warning to his wingman. Sadly the Patriot had locked-on the second RAF aircraft and shot it down. The wreckage was later discovered in the desert in north-west Kuwait, as were the bodies of the two crew members

#### Quick turn-around

At the height of the thankfully brief conflict, the GR.4 bombers from Ali Al Salem were bombing targets across the country, including around Tikrit, the family stronghold of Saddam Hussein, and around Baghdad, attacking



• ZD720/DA 'Talisker' of No 15(R) Sqn.  
(Credit: Campbell Andrews)

.....and some 'common' Whiskys such as:  
• ZD714/AJW 'Johnny Walker' of No 617 Sqn - an ex-A1 Udeid bird. Note the eight LGB and three ALARM mission markers.  
(Credit: Crown Copyright)

Then there was the real nose art!

• ZG714/Q, a GR.4A of No 2 Sqn - 'Truffle Snufflers'/'It's a Recce Thang' complete with Scooby Doo and Daphne plus a sharkmouth! (Credit: Campbell Andrews)

• ZA600/AJL 'Hot Stuff' of No 617 Sqn., who was originally a 'nude' before a bikini was painted over her! (Credit: Campbell Andrews)

ground, support crews performed a 'hot turn-around' for the first time in combat conditions in Tornado history. The jets were re-fuelled and re-crewed without stopping the engines and sent away on a second mission within 45 minutes.

W/Cdr Paddy Teakle said that many had grown up while in the Gulf. "They went out as youngsters and they came back as men who've gone through quite a harrowing experience."

Unlike 'Operation Desert Storm, weather was no longer an issue with the advent of GPS guided munitions. Enhanced Paveway now offers a bombing accuracy of between four to eight feet - from a release height of 30,000 feet! In total, some thirty-two Tornado GR.4/4As were deployed on 'Operation Telic' and some will remain in Theatre providing security in the period of creating an interim government in Iraq.

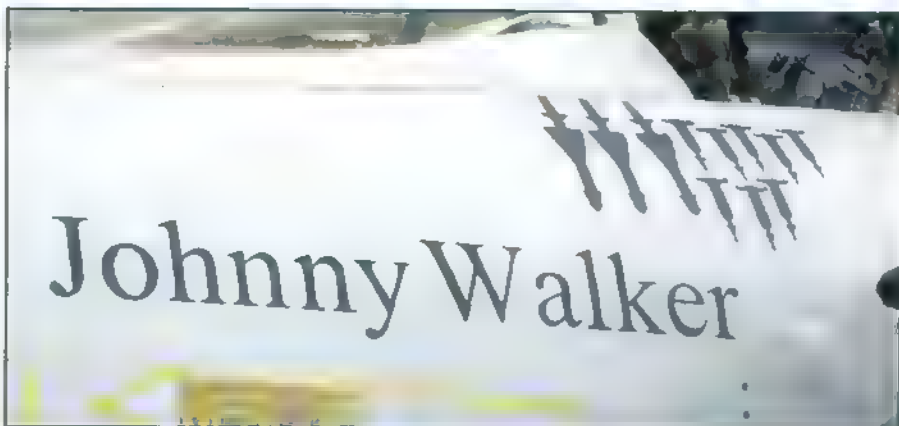
On 6 May, Nos 9 and 13 Squadrons returned to Marham, following No 11(AC) and No 31 Squadrons earlier the previous week. In all, the RAF accounted for ten percent of coalition sorties during 'Operation Telic/Iraqi Freedom', averaging between 120 and 140 sorties per day.

Those that have returned will undergo servicing and removal of the temporary light-grey colour scheme, which if left will begin to corrode the airframe, so sadly it will mean the end of the splendid array of nose-art, a feature traditional on operational aircraft dating back to the early days of modern warfare.

#### Tornado Artwork

As in the first Gulf War, artwork was applied to most of the combat aircraft involved. Numerically, enjoying the lion's share of RAF aircraft, the Tornado GR.4/4As, featured the most artwork, (although the F.3s also weighed-in with a healthy number of caricatures as well!).

The OC Eng for the detachment was responsible for overseeing the painting of the aircraft. Every attempt was made to mimic the tailcode of the aircraft with the theme or initials of the artwork, and female figures were avoided, or at least mostly clothed, in case the aircraft had to divert to Saudi Arabia - Moslem sensitivities were to be respected. Cartoon characters were a favourite amongst the 'artists', although several machines were simply named after various brands of Scottish Whisky.



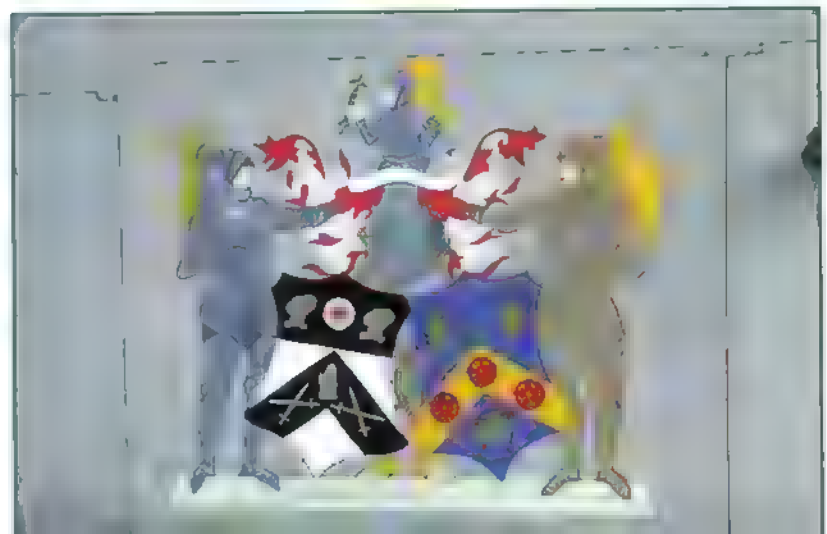
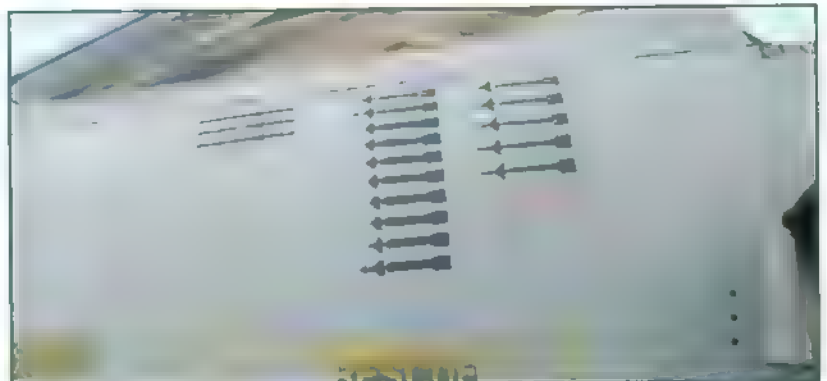
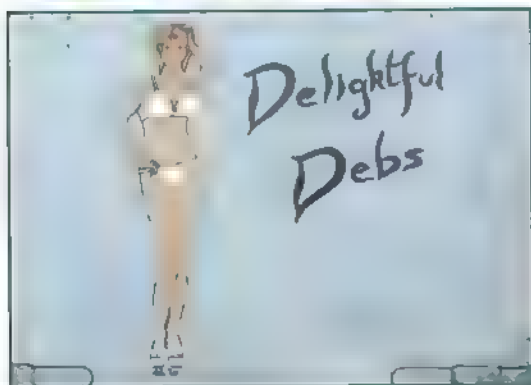


Above left: Artist at work! GR 4, ZA405/DG 'The Grinch - Mean One/It's a Grinch Thing You Wouldn't Understand' of No 31 Sqn. (Credit: Crown Copyright)

Above: The Christmas Tree artwork of GR.4, ZG850/AJT 'Rect's Controller's Dream/The glory is in the giving' of No 617 Sqn. This aircraft became something of a 'hangar queen' donating spares - hence the gifts around the Christmas Tree and the legend 'The glory is in the giving'. This aircraft was originally painted up as 'Show Time' for No 617 Squadron's 'Anniversary' photo - (see left) Note the small time bomb under the windshield. (Credit: Gary Parsons f4 Aviation)

Left: ZG850/AJT as she looked as 'Show Time' for the 'Anniversary' photo. (Credit: Crown Copyright)

Below: Four views of ZA607/AB 'Delightful Debs' artwork. See the Inside Back Cover four-view illustration of this well decorated No 9 Squadron machine. (Credit: Crown Copyright)





Above left: ZA592/BJ of No 14 Sqn. The lo-viz 'sharkmouth' gives an aggressive impression to the Tornado. ZA592 carried the Combat Air Wing emblem on the fin. (Credit: Gary Parsons f4 Aviation)

Above top: ZD715/AM of No 9 Sqn., 'Alarm Maiden'/'Here comes The Sun' on the starboard side). Note the thirteen ALARM, two Paveway III, fifteen Paveway II and four Concrete Bomb symbols. (Credit: Crown Copyright)

Above: ZD740/DR 'Desert Raven' of No 31 Squadron. (Credit: Crown Copyright)

Left: A No 13 Squadron GR 4A, ZG707/B 'BABS' - one of the hardest working of the detachment by the look of the mission symbols! (Credit: Gary Parsons f4 Aviation)

Below left: One of the original RAF 'residents' of Ali Al Salem was this GR.4, still in its standard two-tone Dark Sea Grey/Dark Camouflage Grey colour scheme and No 12 Squadron markings on the nose. (Credit: Crown Copyright)



Below: Yet another GR.4A, ZA727/L 'Look'n for Twouble', this time from No 13 Squadron. (Credit: Crown Copyright)





Left: No 31 Squadron's GR.4, ZA551/DI, 'Dishy Intel' up close! (Credit: Keith Cross)

Below left: GR.4A, ZG726/K 'Kylie' of No 13 Sqn. (Credit: Gary Parsons f4 Aviation)

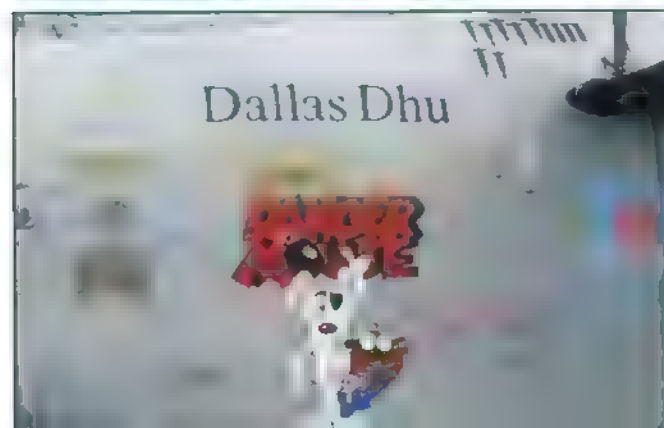
Below: ZA554/BF, 'Born Fighter'/(Dennis the Menace and Gnasher), of No 14 squadron. (Credit: Crown Copyright)

Middle left: The OC of No 31 Sqn., W/Cdr Paddy Teakle, flew (No 14 Squadron's) ZA606/BD 'Big Deal' with his caricature playing cards with Saddam Hussein. He is holding five cards representing Nos 2, 9, 13, 31 and 617 Squadrons. On the table the chips are Weapons of Mass Destruction. (Credit: Crown Copyright)

Middle right: GR.4A, ZG711/O, 'Oh Nell' - a reference to model Nell McAndrew. (Credit: Keith Cross)

Bottom left: ZA542/DM 'Dallas Dhu/'Danger Mouse/Crumbs Chief' of No 31 Squadron, was initially at Al Udeid in Qatar but the artwork was applied when the unit re-located at Ali Al Salem in Kuwait. (Credit: Crown Copyright)

Bottom right: ZA589/DN 'Deadly Nightshade' of No 31 Sqn., also carried five Storm Shadow, six ALARM and ten LGB symbols. (Credit: Crown Copyright)





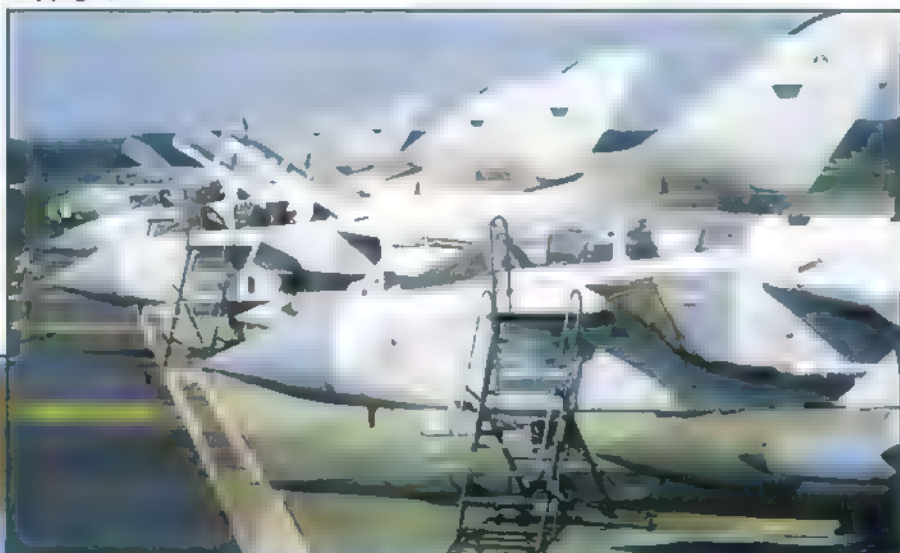
Left: The Combat Air Wing fin badge, representing all the Tornado Squadrons involved in 'Operation Telic', and which was applied to many Gulf-based Tornados. (Credit: Crown Copyright)

Below left: ZA614/AJJ, 'ShowTime' of No 617 Sqn., which undertook at least five Storm Shadow and fifteen LGB missions. (Credit: Crown Copyright)

Above: GR.4A, ZA400/T, 'Scud Hunters/Go get 'em Boys' of No 2 Sqn., complete with nose art and sharkmouth, plus 1000lb Paveway II LGB load. (Credit: Crown Copyright)

Below: Line up of Tornado GR.4s at Ali Al Salem, with ZG794/F 'Glenfarclas' of No 15(R) Squadron in the foreground. Note the darker grey (replacement?) port intake. (Credit: Crown Copyright)

Bottom: Atmospheric night time shot of a Tornado GR.4 in its HAS. (Credit: Crown Copyright)

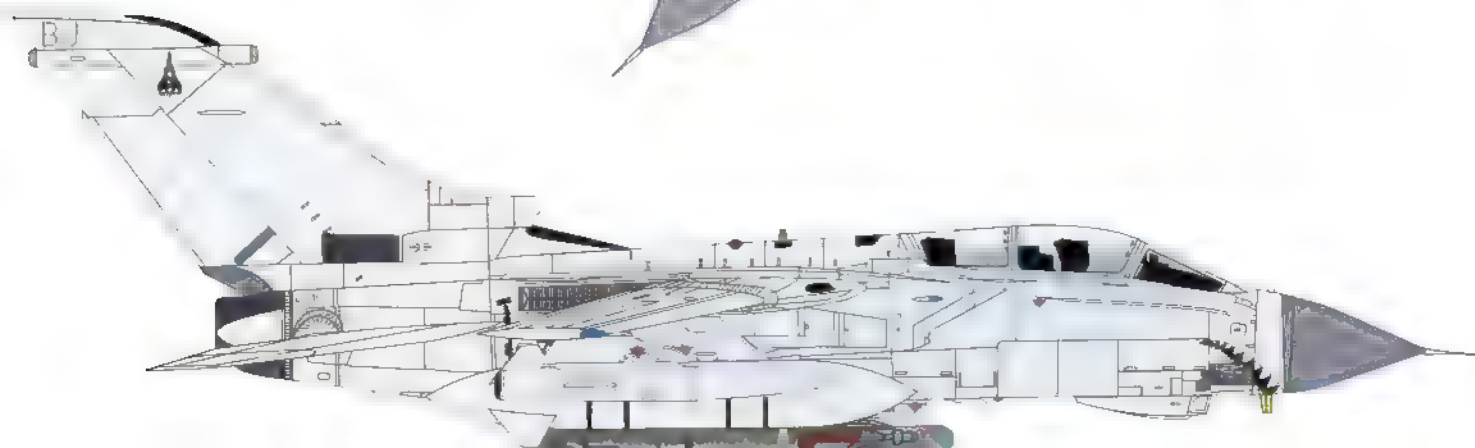
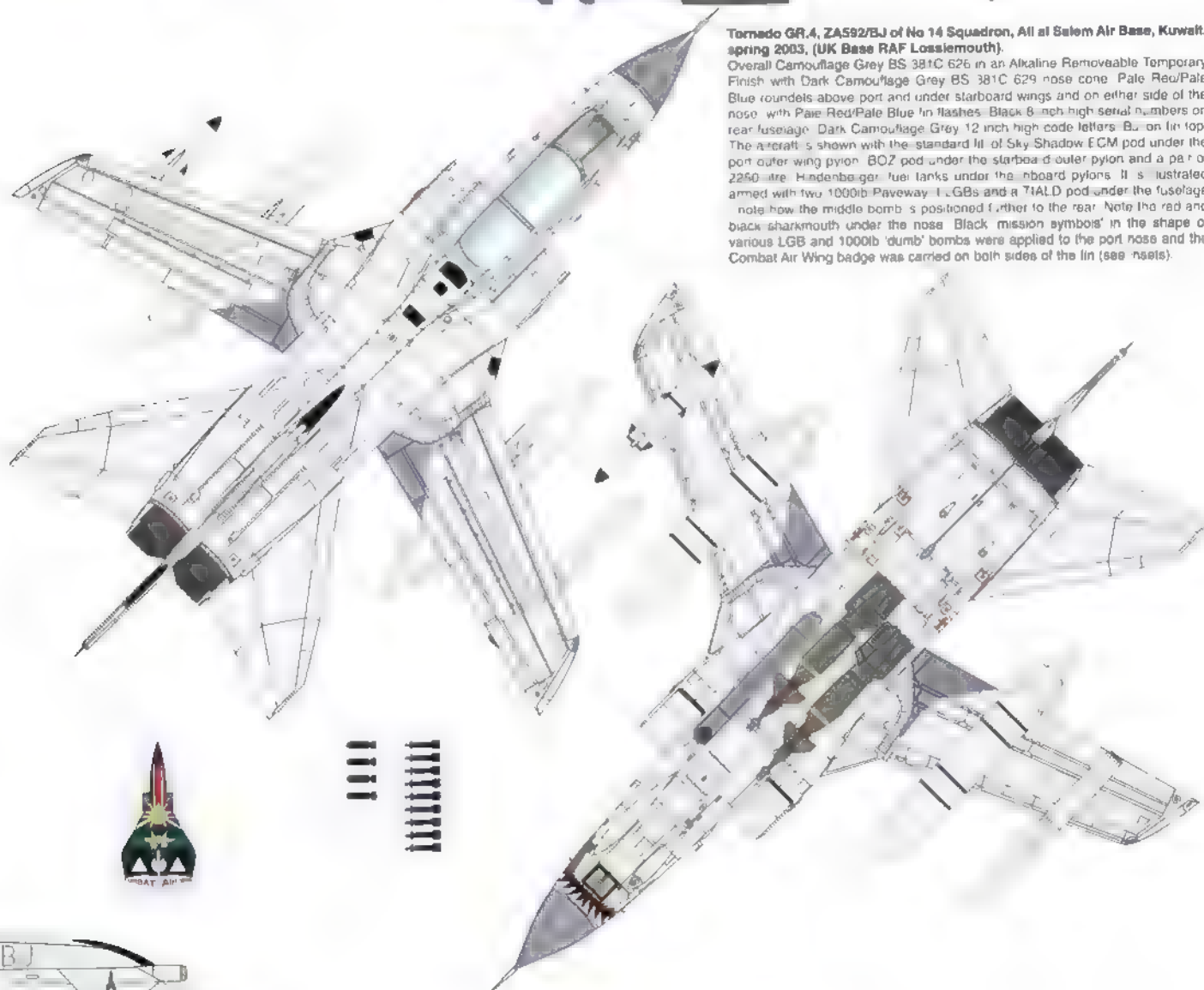


# Panavia Tornado GR4/GR4A



**Tornado GR4, ZA592/BJ of No 14 Squadron, All at Salem Air Base, Kuwait, spring 2003, (UK Base RAF Lossiemouth).**

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue 1in flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'BJ' on fin top. The aircraft is shown with the standard fit of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre Hadenberger fuel tanks under the inboard pylons. It is illustrated armed with two 1000lb Paveway II LGBs and a TIALD pod under the fuselage (note how the middle bomb is positioned further to the rear). Note the red and black 'sharkmouth' under the nose. Black mission symbols in the shape of various LGB and 1000lb 'dumb' bombs were applied to the port nose and the Combat Air Wing badge was carried on both sides of the fin (see insets).



# Tornado F.3



Like the RAF's Tornado GR 4s, the F.3s were far better prepared for a war in the Gulf than in 1991. Having spent much of the intervening years on detachment enforcing the 'No-Fly Zones', the crews were far better prepared for what lay ahead. The Air Defence arm of the RAF was fully integrated in to the overall 'top cover' with Tornado F.3s flying escort for many coalition raids protecting amongst others, RAF Tornado GR.4s and Harrier GR.7s, and USAF B.1s and F-15Es.

According to the MoD, the Royal Air Force contributed about 10% of the 1200 or so daily sorties, which matched the scale of the deployment, but their contribution in terms of 'effect' was probably much greater, not least because the balance of the combat air power deployed was largely *offensive* rather than *defensive*.

## Tornado EF.3

Early reports of ALARM carrying

Tornado EF.3s being deployed to the Gulf appear to be unfounded due to the availability of modified aircraft, (at least from the information available at the time of publication). As part of their 'usual' operations, the Detachment of Tornado F.3 Interceptors already in the Gulf, was bolstered by additional aircraft from Leeming and Leuchars and, for the first time, these aircraft carried the latest and deadly Advanced Short Range Air to Air Missile (ASRAAM). Also, as part of their defensive suite, the F.3s had the GEC-Marconi TRD, (Towed Radar Decoy - or 'turd' in RAF speak!), mounted in a modified BOZ pod on the port outer wing pylon, 'counter-balanced' by a Phimat pod on the starboard outer wing pylon.

Happily for the aircrews, the F.3s were allowed a greater role in this conflict than they were asked to 'endure' during the Gulf War of 1991, when the interceptor pilots were frustrated at their

relegation to 'mere' CAP duties over friendly skies due to the capacity of the IFF system at the time.

Despite 'still not being quite as involved' as their GR.4 counterparts, the Tornado F.3s provided a necessary presence to deter any would-be attackers, and future plans for the aircraft will expand its role even further.

## Tornado F.3 artwork

Where the Tornado F.3s *did* score more in this conflict than in the last one though, was in the area of artwork. Not to be outdone by the 'mud movers' - (sand movers?), the F.3 fleet, which retained its standard two-tone, Camouflage Grey/Light Aircraft Grey scheme with Pale Red/Pale Blue national markings, produced some very eye-catching artwork.

For its 'theme' the F.3 ground crews chose to name several aircraft after famous World War One and World War Two RAF/RCAF/RAAF fighter aces, and names like 'McCudden', 'Bishop', 'Collishaw', 'Bader', 'Stanford-Tuck', 'Caldwell' and 'Deere' were applied to the starboard nosewheel doors together with these pilots' final 'scores' and four black playing cards featuring each suites' Ace of Spades.

Additional, more colourful 'nose art', again featured British comic cartoon characters such as 'The Beano's' 'Dennis the Menace', 'Desperate Dan' and 'Roger the Dodger', with some other rather 'non-PC artwork', all generally located around the area of the lower fuselage access panels.

**Heading:** Four Tornado F.3s, ZE206/UI; ZE962/XC; ZE737/YM and ZE162/UR, lined up in the harsh desert sun, ready for take off from the hardstanding at Prince Sultan Air Base, Saudi Arabia, possibly for a training mission before the conflict began. (Credit: Crown Copyright)

**Above left:** Taxying out for another escort mission - a pair of Tornado F.3s, (identities unknown), fitted with the GEC-Marconi TRD, (Towed Radar Decoy), in the BOZ pod on the port outer wing pylon and a Phimat pod on the starboard outer wing pylon, and Skyflash AAMs under the fuselage. (Credit: Crown Copyright)

**Left:** A brace of Tornado F.3s - ZE758/YI and ZE158/UW - on patrol over the desert. (Credit: Crown Copyright)





Above: Action shot of a Tornado F3 releasing defensive chaff flares 'somewhere over Iraq'. (Credit: RAF)

Right: An ASRAAM armed F3 takes on fuel from a USAF KC-10. (Credit: Crown Copyright)

Below: The F3s flew armed escort for such aircraft as the Rockwell B-1B, seen here taking on fuel from a USAF KC-10. Note the TRD modified BOZ pod on the nearest aircraft, ZE963/XB from No 111 Sqn. (Credit: RAF)



**Tornado F.3, ZE731/YP, named 'Desperate Dan/Bishop 72' of No 111 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leeming).**

Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'YP' on fin top. The aircraft is shown with the 'standard F3 fit' of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in to its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. Black name 'Bishop 72' and black playing cards on starboard nosewheel door, with 'Desperate Dan' cartoon on port fuselage (see insets)



## BISHOP 72

Starboard Nosewheel door

**Tornado F.3, ZE158/UW, named 'McCudden 57' of No 25 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leeming).**

Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'UW' on fin top. The aircraft is shown with the 'standard F3 fit' of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in to its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. Black name 'McCudden 57' and black playing cards on starboard nosewheel door (see inset)



## McCUDDEN 57

**Tornado F.3, ZE631/XO, of No 25 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leeming).**

Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'XO' on fin top. The aircraft is shown with the 'standard F3 fit' of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in to its fuselage and four ASRAAMs - two on either side of the inboard wing pylons.

**Tornado F.3, ZE907/XH, of No 11 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leeming).**

Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'XH' on fin top. The aircraft is shown with the 'standard F3 fit' of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in to its fuselage and four ASRAAMs - two on either side of the inboard wing pylons.

# Addendum

No sooner had this book 'gone to press', than we *discovered* some additional information which we decided to include in this addendum sheet

First of all, and possibly most importantly, the Tornado named '*Mean One/It's a Grinch Thing*', (illustrated on page 9), was almost certainly a Tornado GR 4A, serialled ZG729, coded 'M' on the fin - and not a GR 4 serialled ZA458/DG as illustrated! Our apologies for this error which came about through misinterpretation of certain photos.

Note: The appropriate decal sheet (MA-109) has been suitably amended.

It would also appear that some Tornado GR.4/4As sported *white* serial numbers (*and not black*) on their fuselage sides. These *may* have been applied over the black serial numbers in a temporary vinyl 'stick-on' form.

At this time of writing, airframes noted with *either black or white* fuselage serial numbers are:-

Tornado GR.4, ZD715/AM ' <i>Alarm Maiden</i> '	- WHITE
Tornado GR.4, ZA607/AB ' <i>Delightful Debs</i> '	- WHITE
Tornado GR.4, ZA554/BF ' <i>Born Fighter</i> '	- WHITE
Tornado GR.4, ZA592/BJ ( <i>no name - low viz sharkmouth</i> )	- BLACK
Tornado GR.4, ZA542/DM ' <i>Danger Mouse/Dallas Dhu</i> '	- WHITE
Tornado GR.4, ZA547/DC ' <i>Star Turn</i> '	- WHITE (not illustrated)
Tornado GR.4, ZA589/DN ' <i>Deadly Nightshade</i> '	- BLACK
Tornado GR.4, ZA553/DI ' <i>Dishy Intel</i> '	- BLACK
Tornado GR.4, ZG775/FB ' <i>The Macallan</i> '	- BLACK
Tornado GR.4, ZA600/AJL ' <i>Hot stuff</i> '	- WHITE
Tornado GR.4, ZA614/AJJ ' <i>It's Showtime</i> '	- WHITE
Tornado GR.4, ZD850/AJT ' <i>The Glory is in the giving</i> '	- BLACK
Tornado GR.4, ZD714/AJW ' <i>Johnny Walker</i> '	- WHITE
Tornado GR.4, ZG792/AJG ' <i>Glen Moray</i> '	- BLACK (not illustrated)
Tornado GR.4A, ZG707/B ' <i>BABS</i> '	- BLACK
Tornado GR.4A, ZG794/F ' <i>Glenfardes</i> '	- BLACK (not illustrated)
Tornado GR.4A, ZG7264/K ' <i>Kylie</i> '	- BLACK
Tornado GR.4A, ZG729/M ' <i>Mean One/Grinch</i> '	- WHITE
Tornado GR 4A, ZG711/O ' <i>Oh Nell</i> '	- WHITE
Tornado GR.4A, ZA400/T ' <i>Scud Hunters</i> '	- BLACK

All the above were recorded at Ali al Salem, Kuwait, at the end of April 2003.

Note: Additional white serial numbers have been included on both decal sheets (MA-109 and MA-110).

Also more information has recently been released about the RAF's bases during 'Operation Telic'

## Ali al Salem, Kuwait

Tornado GR.4/4A (Nos 2, 9, 31 and 617 Squadrons)

Chinook (No 18 Squadron)

Puma (No 33 Squadron)

Lynx and Gazelle (No 3 Regt AAC)

## Ahmed al Jaber, Kuwait

Harrier GR.7 (No 4 Squadron)

## Prince Sultan Air Base, Saudi Arabia

Tornado F.3 (Nos 11, 25, 43 and 111 Squadrons)

BAe 125 CC.3 (No 32 Squadron)

E-3D AWAC (Nos 8 and 23 Squadrons)

Nimrod MR.2 (Nos 120, 201 and 206 Squadrons)

VC 10 (Nos 10 and 101 Squadrons)

Nimrod R.1 (No 51 Squadron)

## Seeb, Oman

Nimrod MR.2 (Nos 120, 201 and 206 Squadrons)

## Al Udeid, Qatar

Tornado GR.4 (Nos 2, 12 and 617 Squadrons)

BAe 125 CC.3 (No 32 Squadron)

## Muharraq, Bahrain

Tri Star (of No 216 Squadron)

## Azraq, Jordan

Harrier GR.7 (No 3 Squadron)

Chinook (No 7 Squadron)

Canberra PR.9 (No 39 Squadron)

Despite remaining 'on the inventory' of their home-based units, the Tornado GR 4/4As, Tornado F3s and Harrier GR.7s appear to have been 'pooled' when in Theatre and allocated as required to the nominal squadrons for operations

## 43

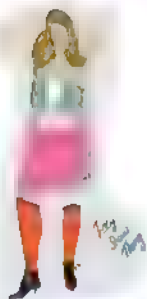
OPTIC  
2003

Green Island      Long Point  
and Harbor      Anne Russell



**LACEY 28**

Starboard Npsewheel door



BADER 22

Starboard Nosewheel door

STANFORD-TUCK 28

Starboard Nosewheel door

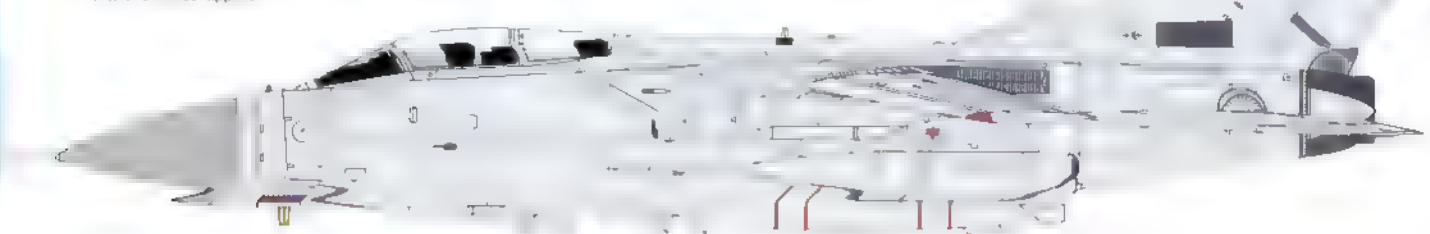
PROCTOR 54

**PAK Base RAY Locators:**  
Camouflage HAP BS 381C 626 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'UR' on fin top. The aircraft is shown with the 'standard F3 lit' of Towed Radar Decoy in a modified BOZ pod under the port port outer wing pylon and a Phintal pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in to its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. Black name 'Proctor 54' and black playing cards on starboard nosewheel door (see insets).

**Tornado F3, ZE164/UQ, of No 111 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leuchars).**  
Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Gray BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'UQ' on fin top. The aircraft is shown with the standard F3 fit of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. No artwork/names applied.



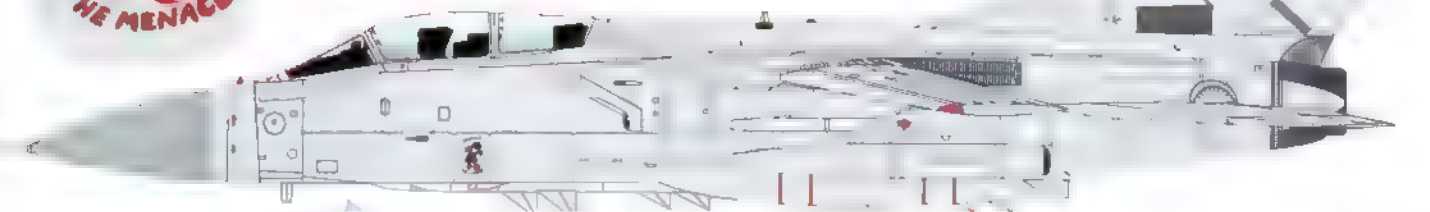
**Tornado F3, ZE808/XV, of No 25 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leeming).**  
Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Gray BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'XV' on fin top. The aircraft is shown with the standard F3 fit of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. No artwork/names applied.



**Tornado F3, ZE962/XC, named 'Dennis the Menace/Deere 27' of No 25 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leeming).**  
Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Gray BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'XC' on fin top. The aircraft is shown with the standard F3 fit of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. Back name 'Deere 27' and black playing cards on starboard nosewheel door with cartoon artwork 'Dennis the Menace' on port fuselage (see insets).



**DEERE 27**



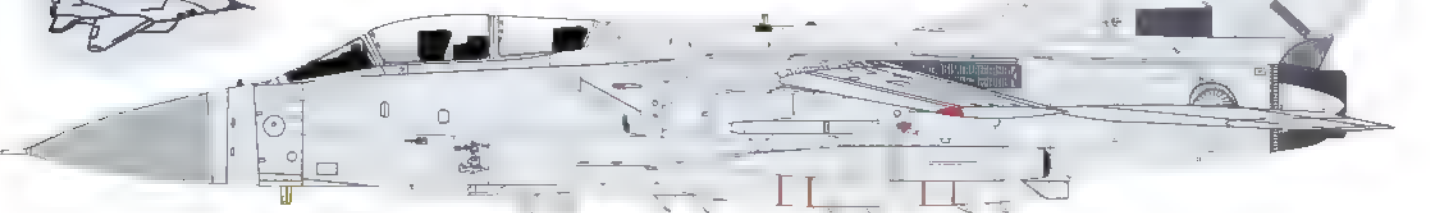
**Tornado F3, ZE968/XB, named 'Have It!/Collishaw 60' of No 111 Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Leuchars).**

Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Gray BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'XB' on fin top. The aircraft is shown with the standard F3 fit of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phimat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. Black name 'Collishaw 60' and black playing cards on starboard nosewheel door with cartoon artwork 'Have It!' on port fuselage (see insets).

Starboard Nosewheel door



**COLLISHAW 60**



Starboard Nosewheel door

# Panavia Tornado F.3



**CALDWELL 28**

Starboard Nosewheel door

Tornado F.3, ZE758/YI, named 'Tremble/Caldwell 28' of DARA, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF St Athan). Camouflage Gray BS 381C 626 upper surfaces with Light Aircraft Gray BS 381C 627 under surfaces. Radome grey nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. White 8 inch high serial numbers on base of fin. White 18 inch high code letters 'YI' on fin top. The aircraft is shown with the standard F.3 fit of Towed Radar Decoy in a modified BOZ pod under the port outer wing pylon and a Phmat pod under the starboard outer wing pylon with a pair of 1500 litre fuel tanks under the inboard wing pylons. It is armed with four Skyflash air-to-air missiles recessed in to its fuselage and four ASRAAMs - two on either side of the inboard wing pylons. Black name 'Caldwell 28' and black playing cards on starboard nosewheel door with shark artwork on port fuselage (see insets)





Top left: ZE758/YI sported the excellent shark caricature 'Tremble' and the WWII RAAF Ace's name 'Caldwell 28' on the nosewheel door.  
(Credit: Crown Copyright)

Top right: The nosewheel door of ZE162/UR with the name 'Proctor 54'  
(Credit: Mark McEwan/Squadron Prints)

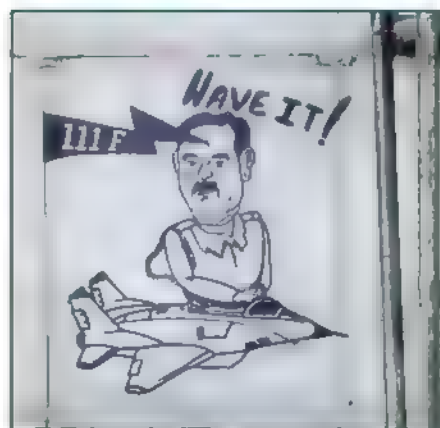
Above left: Tornado F3, ZE737/YM, named 'The Dodger/Stanford-Tuck 28' in its shelter. See top of next page for details.  
(Credit: Crown Copyright)

Above right: The 'artwork' - (surely the ugliest piece of nose art ever carried by an RAF aeroplane!) on ZE206/UI named 'Tracy Shaw Thing' and 'Soccer AM'. ZE206 also carried the name 'Bader 22' on the nosewheel door.  
(Credit: Crown Copyright)

Upper right: ZE968/XB '111F/HAVE it!' also carried the name 'Collishaw 60' on the nosewheel door (Credit: Crown Copyright)

Right: The cloth shoulder badge worn by 43 and 111 crews of the Leuchars Fighter Wing  
(Credit: RAF)

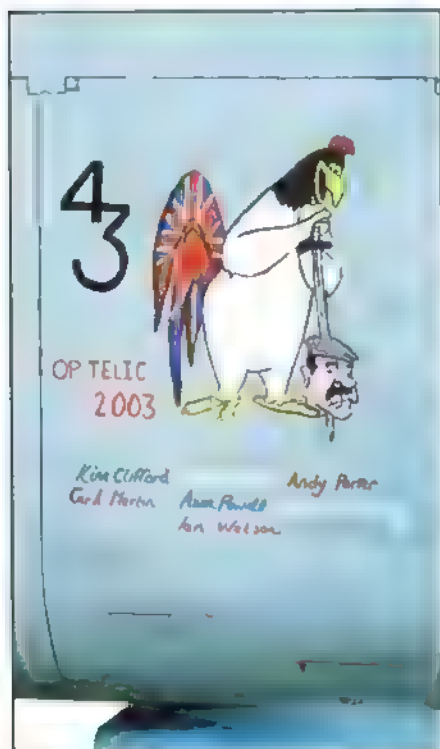
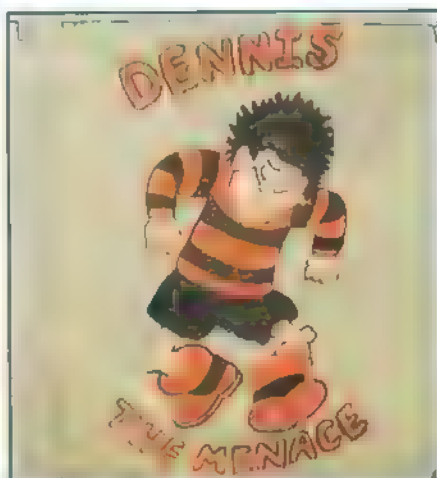
Left: Skyflash air-to-air missile ready for loading. (Credit: RAF)





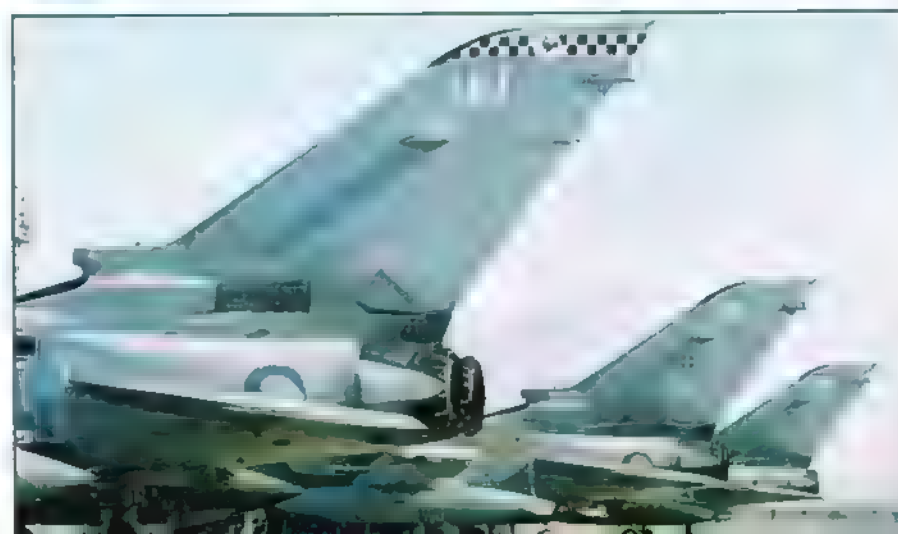
Above - left and right: The port fuselage cartoon artwork of the 'Beano' comic character, Roger, 'The Dodger' and the starboard nosewheel door with the WWII RAF ace's name and score 'Stanford-Tuck 28' - both on ZE737/YM, (Credit: Mark McEwan/Squadron Prints)

Right: Two more 'Beano' comic characters - immediate right 'Dennis the Menace/Deere 27' which was featured on ZE962/XC, and far right, 'Desperate Dan' on ZE731/YP, which also carried 'Bishop 72' on the nosewheel door. (Credit: RAF)



Above and right: ZE161/UU of No 43 Squadron, (almost appropriately!) adorned with another famous cartoon character, 'Foghorn Leghorn' with Union Jack tail feathers and 'Lacey 28' on the nosewheel door. (Credit: Mark McEwan/Squadron Prints)

Right The tails of Tornado F3s - ZE161/UU; ZE162/UR and ZE737/YM just after the conflict - with ZE161/UU in the foreground - fully restored with its No 43



# Harrier GR.7



In terms of Close Air Support (CAS), the Harrier in all its guises is one of the maestros. Able to operate from austere sites and capable of hanging an almost encyclopaedic variety of 'destruction' under its wings, it has matured from something of an oddity into a very potent weapons platform. In a similar vein to the Tornado GR.4/4A deployments, RAF Cottesmore also readied and despatched an initial contingent of some ten Harrier GR.7s to the Gulf, complete with their own TIALD laser designation capabilities, the recently introduced American AGM-65 Maverick air-to-surface missile and a collection of the latest Precision Guided Munitions

Unlike their US Marine counterparts, the RAF's Harrier IIs were not used in the 1991 Gulf conflict because of the type's then relatively recent introduction to RAF service. However, the Harrier GR.7 has since proved itself over Iraq as part of 'Operation Southern Watch', and has also dropped bombs in anger in the Kosovo campaign.

Harriers have now received their own, autonomous, laser designation tool in the form of the GEC Marconi TIALD pod, which allows them to self-designate, or 'buddy' designate, the range of Paveway bombs currently in the RAF's inventory. Also added was the Maverick anti-armour, air-to-surface

missile, which was procured from the US as a result of the Kosovo conflict where the lack of a precision guided stand-off weapon had become blatantly obvious after the RAF found 'taking-out' single targets close to buildings and so forth difficult to achieve with the weapons they then had in service.

Unlike the Tornado GR.4s, the Harriers did not receive a new paint scheme for 'Operation Telic'. From the outset of the conflict, the RAF's Harriers were slated to operate at medium levels and retained their 'permanent' two-tone grey scheme, comprising Dark Sea Grey upper surfaces with Dark Camouflage Grey side and under surfaces, with Red/Blue national markings; a scheme applied to all RAF attack aircraft during the late 1990s.

Harrier GR.7s were heavily involved in close air support missions across Iraq. The new Maverick missile was also fired in anger for the first time - against a mobile SCUD launch site some 200 miles into Iraq during the first days of the conflict, when a pair of AGM-65s were successfully engaged and

**Heading:** A typical 'fit' for a Precision Guided Munitions mission - two 1000lb Paveway II LGBs, a TIALD pod under the fuselage; four BOL rails and a pair of AIM-9L Sidewinders. (Credit: Crown Copyright)

**Left:** No 4 Squadron's Cottesmore flight pan in early May 2003 showing to advantage the type's two-tone grey camouflage scheme, comprising Dark Sea Grey upper surfaces with Dark Camouflage Grey side and under surfaces, with Red/Blue national markings. Note the extended in-flight refuelling probes (Credit: Gary Parsons f4 Aviation)





destroyed their target.

Operating either with a specific tasking, or operating on a 'flying alert' basis, waiting to be called in by on-the-spot ground commanders, the Harriers maintained an almost constant presence over the battlefield, frequently coming under enemy fire, as in an incident recounted by RAF aircrew at the start of the war

On this particular occasion a pair of Harrier GR.7s were operating inside Iraqi airspace near the Kuwaiti border when the attack occurred. A volley of anti-aircraft shells exploded just behind the aircraft as they carried out a night patrol mission. Veteran Harrier pilot F/Lt 'Jocky' Wilson explained, "We were flying a regular mission as pair and had passed over an area of known Iraqi military activity. We felt some jolts and bangs behind us and realised *they were shooting at us!* We were the first Harrier pilots to come under AAA fire in this conflict and I can remember saying to my wingman, 'Wow, they are really shooting at us!'" F/Lt Wilson added, "Obviously, they knew we were in that area and tried to chuck everything they had up at us. There were about ten or so explosions. I guess they wanted to produce the wreckage of a coalition aeroplane or a captive pilot for their TV to try and dissuade other coalition pilots. If you see flak in front of you, you can climb or dive to dodge it but, because it

was behind us, we just had to carry on. It is unlikely they would have got a direct hit with AAA, but you can get shrapnel damage if it bursts really close. When the shell explodes, it produces super hot fragments so, if one penetrates your fuel tanks, it can easily set you alight."

A normal offensive load for the Harriers would include the 1000lb Paveway II or 2000lb Enhanced Paveway III; 500 or 1000lb 'iron' bombs; RBL-755 Cluster weapons; Maverick missiles; Sidewinder AAMs; TIALD pod and up to four Celsius Tech BOL Chaff & Flare launchers. Jaguar reconnaissance pods were also integrated on to a number of Harriers so that they could be used in dual CAS & recce if needed

Speaking at a briefing in Qatar, G/Capt Jon Fynes said the Harriers, had met a *significant number* of Iraqi missiles

and AAA fire, but had rapidly reduced the strength of the Iraqi forces. He said coalition air forces had worked around the clock to attack military and Republican Guard targets.

He also commented that the RAF had provided extremely responsive and flexible support, and he highlighted the case of one Harrier pilot who was required on task unexpectedly and was roused from sleep and took off within 70 minutes! He added, "We *can* adapt quickly when required."

Once the coalition had gained total air supremacy, refuelling tankers were able to circle over Iraqi skies enabling the fighter bombers to take on enough fuel to reach Northern targets. F/Lt Ian 'Cab' Townsend was euphoric after returning 'Winchester' - (all bomb racks empty) - from a strike in the North of

**Above:** Harrier GR.7, ZG477/67 of No 3 Sqn taxis out for another sortie, 'armed' with a pair of empty 30mm cannon pods acting as LIDs; two 1000lb free fall bombs; a pair of AIM-9L Sidewinders and four BOL rails. (Credit: Crown Copyright)

**Right:** An AGM-65G2 Maverick anti-armour air-to-surface missiles loaded on the port inner wing pylon of a Harrier GR.7. Note the seeker lense and stencil detail. (Credit:

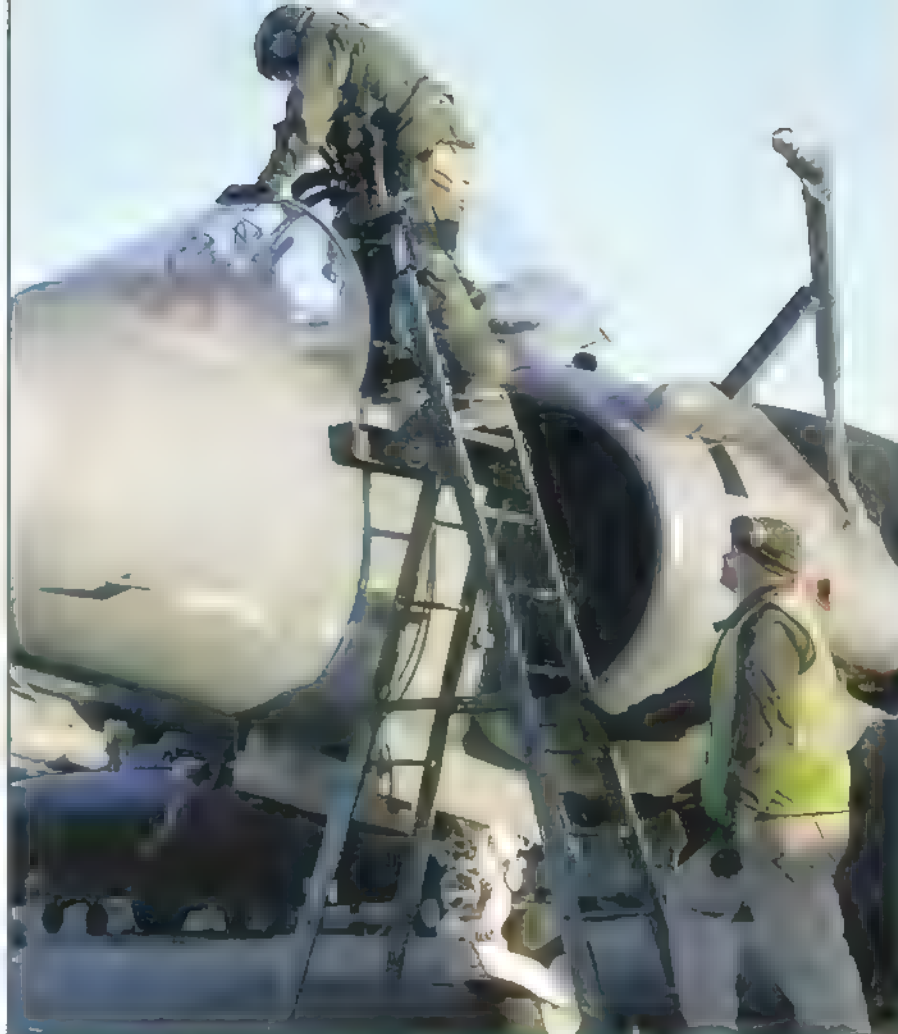


refuelling stop, he was able to loiter over the target area before releasing two Paveway II Laser Guided Bombs and two freefall bombs

He commented, "Visibility was as sweet as a nut. The freefall bombs made a hell of a bang. They were top banana! I hit some Iraqi vehicles with the two Paveways and followed up with the two freefalls. They all went to a good cause. There were about eight vehicles making up the target and there were some Tornados already doing business when we arrived. We took over from them. I 'did' one armoured personnel carrier and my wingman dropped two freefalls. There was an American 5 Corps Ground FAC who knew exactly where the target was and when to drop. We were there to help the guys on the ground and we really did our job. The Tornados got two and we definitely got two Iraqi vehicles. That's not a bad night out." F/Lt Townsend got his nickname 'Cab' - short for Cabriolet - after he smashed his canopy hood while he was in training for a tricky air-to-air manoeuvre!

By the end of the campaign the Harrier pilots had flown several hundred missions over Iraqi territory, with some sorties lasting up to eight hours. On their first few missions they had 'taken out' strategic targets, but the majority of the war was spent providing close support for troops on the ground. W/Cdr Stewart Atha commented, "I don't think anyone expected it to turn out the way it did. The campaign was a lot quicker than any of us expected. The worst part was just before we went up - especially on the first night - as we did not know what to expect. It was the fear of the unknown. When you are up there you feel a mix of emotions, there are times when you are scared, but most of the time you are concerned with just doing a good job."

The Harriers began to return home to their UK base at RAF Cottesmore in late April. As W/Cdr Atha's Harrier taxied along the runway, the proud Scot was met by a traditional Bagpiper, in full kilt and uniform, to welcome him and other



members of the detachment home. Once again the versatile Harrier had proved its worth over the battlefield.

#### Harrier Armament

The AGM-65G2 Maverick missile, which is now used by the Harrier GR.7 as an anti-armour weapon, entered RAF service in early 2001 and is the latest addition to the RAF Harrier Fleet's inventory. The missile has a number of seeker heads available for use in a variety of operational scenarios. The RAF

version carries an Imaging Infra-red (IIR) seeker head, which allows the missile to be employed by both day and by night and in poor atmospheric conditions. The missile's autonomous guidance systems

**Above:** A Harrier GR 7 pilot climbs aboard his Paveway II 1000lb Laser Guided Bomb armed aircraft at the outset of a mission into Iraq in the early days of the conflict. (Credit Crown Copyright)

**Below:** An AGM-65 Maverick armed GR 7 is given its pre-flight check by its pilot. Note the AIM-9L Sidewinder on the BOL launch shoe. (Credit Crown Copyright)





give aircrew's launch-and-leave capability at a wide range of distances and speeds. Because of its accuracy and lethal warhead, Maverick provides a high single-pass kill probability.

For use with the Paveway Precision Guided Munitions, the Harriers carry TIALD pods - (Thermal Imaging Airborne Laser Designator). This second-generation laser designator initially entered service when it was still in the development stage in the Gulf War in 1991. The pod was later modified to provide a TV sensor in addition to the Infra-red sensor and following a further number of upgrades the current 400-Series pod is now flown on Tornado GR.4, Harrier GR.7 and Jaguar GR.3 ground-attack aircraft.

The TIALD pod is initially 'pointed' at the target by the aircraft navigation system. Once the pilot, (or navigator), has identified the target on his display he will position it underneath the aiming cross and switch the pod into automatic tracking mode. At the appropriate moment during the attack, the TIALD

laser is turned on, which provides the bomb's guidance system with the information it requires to complete the attack. The whole process is recorded by the aircraft system and can be replayed after landing for analysis to assess the success of the mission.

The Paveway II LGB is essentially a 1000lb general purpose bomb with a seeker head fitted to the nose and with movable guide fins fitted to the tail. A laser is used to designate the required target and the bomb's guidance package then steers the weapon to the source of the reflected laser energy. Laser designation may be provided from the air using the TIALD pod or from forces on the ground using a laser target designator. However, cloud cover over the target may obstruct the laser and prevent weapon guidance. The Paveway III is fitted with a 2000lb hardened target penetrator warhead, which is steered by an improved precision-guidance package that follows the laser designation of a target.

Lessons learned during the Kosovo

**Left: Armed with Paveway II LGBs and RBL755 Cluster Bombs, this GR.7 waits its turn to taxi out for another operational sortie. (Credit: Crown Copyright)**

conflict identified the requirement for the RAF to obtain a weapon to satisfy all-weather 24-hour tasking. The Enhanced Paveway, (EPW), was procured to meet this requirement and the EPW II entered service in 2001 and the larger EPW III entered service in late 2002. Both EPW II and EPW III are based on their laser-guided bomb variants and utilise the same warheads and fin sections. However, the EPW weapons have a modified guidance section to accommodate a Global Positioning System Aided, Inertial Navigation System (GAINS).

The RAF's inventory of cluster bombs look like normal bombs when attached to the aircraft, but when they are released they break open in the airflow and release 147 'bomblets' in to the target area. The BL755 bomb dispenses its bomblets in to the airflow shortly after the weapon leaves the aircraft and on reaching the target they produce a plasma jet that can burn a hole through armour. In addition, the bomblet casing breaks in to fragments that are capable of destroying soft-skinned vehicles and equipment.

Recent improvements to the bomblets, with a designation of IBL755, include better reliability and armour penetration capability. Both BL755 and IBL755 are delivered from low-level attacks. RBL755 is a modification of the original BL755 to give the weapon an anti-armour capability when released from a medium-level attack. A ground-detecting sensor in the tail causes the bomblets to be dispensed after the weapon falls to a height just above the target.

**Below: Harrier GR.7, ZG859/91 of No 4 Sqn., ready for a CAS mission, armed with a pair of RBL755 and two AGM-65 Mavericks, plus a suitably ferocious 'sharkmouth'. (Credit: Crown Copyright)**



Harriers also get nose art

For some reason, the RAF's Harrier Fleet wasn't quite as flamboyant in the application of nose art as their Tornado-equipped colleagues. Retaining their standard two-tone Dark Sea Grey/Dark Camouflage Grey camouflage scheme with Red/Blue national markings, black serial numbers and white fin codes, the first Harrier GR.7 to have any form of nose art, a 'lo-viz' red and white *sharkmouth* was ZG479/69, an SAOEU machine. At least two more GR 7s also had *sharkmouths* applied - ZD408/37 and ZG859/91 - both painted with a little more flair, (in red, white and black), by the same flight line technician, SAC Jim Douthwaite. The majority of the other twenty or so Harriers 'In Theatre', appear to have merely settled for black silhouette 'mission markers' in the shape of Paveway II and III Laser Guided Bombs, Maverick ASMs, RBL755s or plain 1000lb 'iron' bombs.

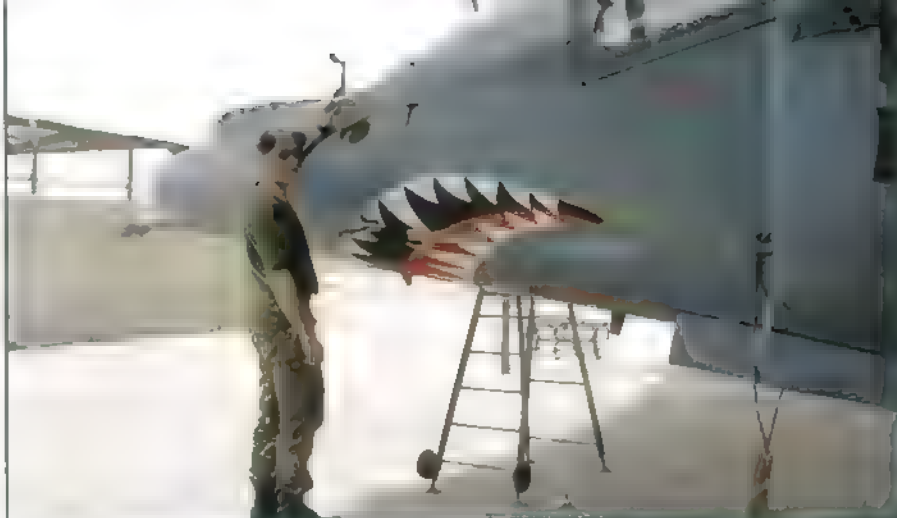
Above right: The artist and his 'canvas', SAC Jim Douthwaite in front of his masterpiece, the *sharkmouth* on ZG859/91. (Credit: RAF Marham)

Right: The other 'Douthwaite' *sharkmouth*, on ZD408/37, one of the two GR.7s that carried 'full blooded' *sharkmouths*. Note the 'fangs'! (Credit: Gary Parsons f4 Aviation)

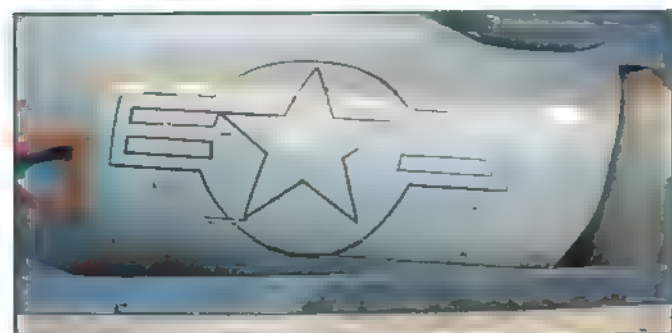
Below right: The 'lo-viz' '*sharkmouth*' on ZG479/69. This aircraft also carried seven LGB and two 'dumb bomb' symbols (Credit Gary Parsons f4 Aviation)

Bottom right: ZG505/76, back at Cottesmore showing ten LGB mission symbols and two 'dumb bombs'. (Credit: Gary Parsons f4 Aviation)

Below: ZG504/75, the personal mount of W/Cdr Stewart Atha, OC No 4 Squadron. The white LGBs denote jettisoned bombs. (Credit: Sgt Jack Pritchard MoD)



Below: ZD401/30 with USMC lo-viz star and bar replacement panel?





Above: Harrier GR.7, ZG505/76, fitted with a TIALD pod under the fuselage.  
(Credit: James Douthwaite)

Right: Harrier GR.7, ZG505/76 again, this time armed with two 1000lb Paveway II Laser Guided Bombs and two 1000lb 'iron' bombs (Credit: James Douthwaite)

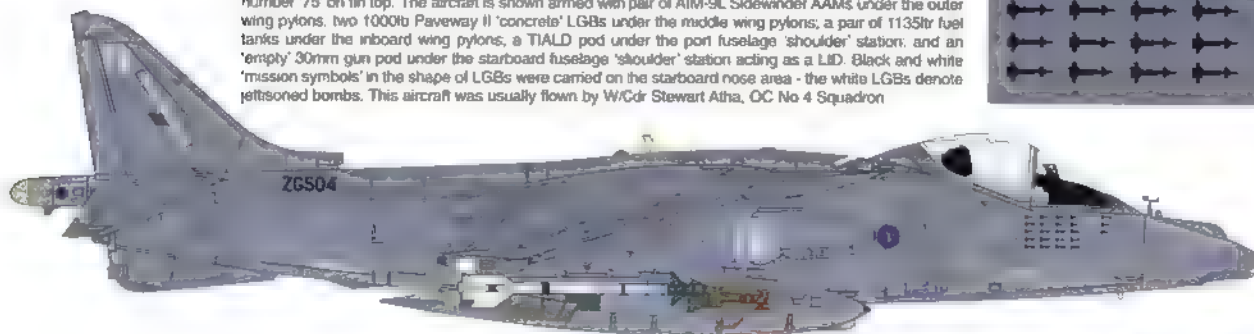
Below right: Harrier GR.7, ZG510/81, fitted with a fuselage centreline mounted reconnaissance pod and a pair of 1000lb Paveway II laser Guided Bombs. (JD)

Below: Harrier GR.7, ZG857/89 showing seven Paveway LGBs and two 'dumb' bomb mission markings. Note the fitting of the 30mm, (GR.1/GR.3 'original style') cannon pods. These were empty housings simply used for Lift Improvement Device (LID) purposes in place of the ventral fuselage strakes and were often fitted asymmetrically with the TIALD pod on the port and the cannon pod on the starboard. (Credit: Gary Parsons)



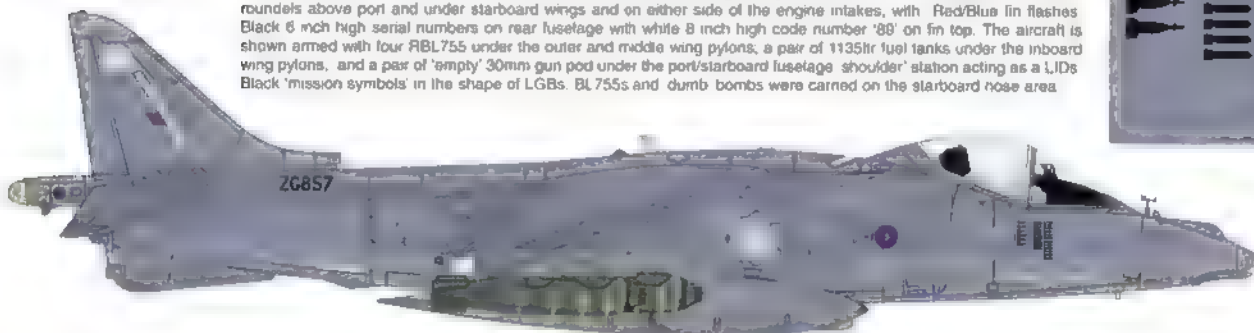
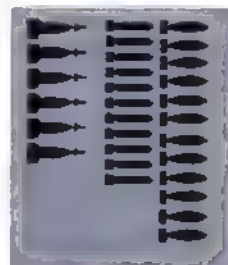
**Harrier GR.7, ZG504/75 of No 1 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003, (UK Base RAF Cottesmore)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '75' on fin top. The aircraft is shown armed with pair of AIM-9L Sidewinder AAMs under the outer wing pylons, two 1000lb Paveway II 'concrete' LGBs under the middle wing pylons; a pair of 1135ltr fuel tanks under the inboard wing pylons, a TIALD pod under the port fuselage 'shoulder' station; and an 'empty' 30mm gun pod under the starboard fuselage 'shoulder' station acting as a LID. Black and white 'mission symbols' in the shape of LGBs were carried on the starboard nose area - the white LGBs denote jetted bombs. This aircraft was usually flown by W/Cdr Stewart Atha, OC No 4 Squadron



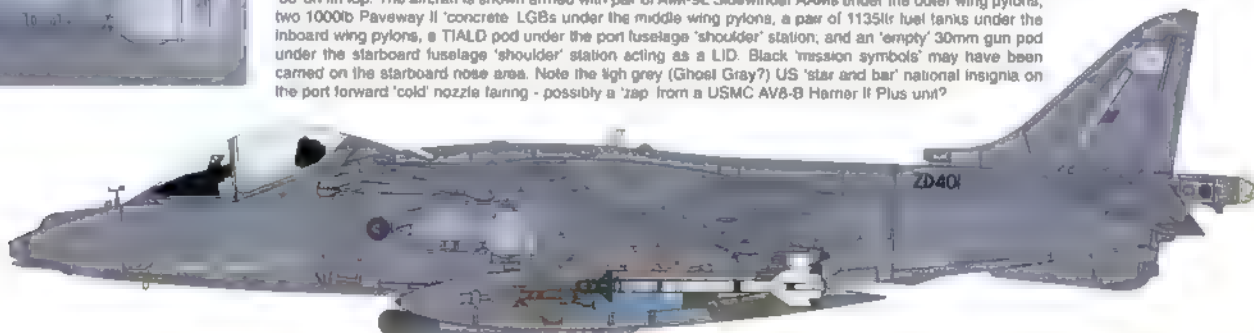
**Harrier GR.7, ZG857/89 of No 1 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003, (UK Base RAF Cottesmore)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '88' on fin top. The aircraft is shown armed with four RBL755 under the outer and middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, and a pair of 'empty' 30mm gun pod under the port/starboard fuselage 'shoulder' station acting as a LID. Black 'mission symbols' in the shape of LGBs. BL755s and dumb bombs were carried on the starboard nose area



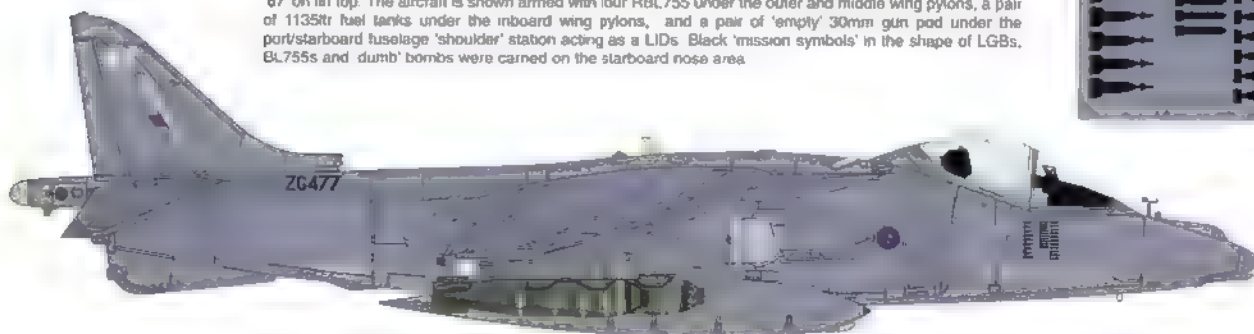
**Harrier GR.7, ZD401/30 of No 3 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003, (UK Base RAF Cottesmore)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '30' on fin top. The aircraft is shown armed with pair of AIM-9L Sidewinder AAMs under the outer wing pylons, two 1000lb Paveway II 'concrete' LGBs under the middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, a TIALD pod under the port fuselage 'shoulder' station; and an 'empty' 30mm gun pod under the starboard fuselage 'shoulder' station acting as a LID. Black 'mission symbols' may have been carried on the starboard nose area. Note the high grey (Ghost Gray?) US 'star and bar' national insignia on the port forward 'cold' nozzle panning - possibly a 'zap' from a USMC AV8-B Harrier II Plus unit?



**Harrier GR.7, ZG477/67 of No 3 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003, (UK Base RAF Cottesmore)**

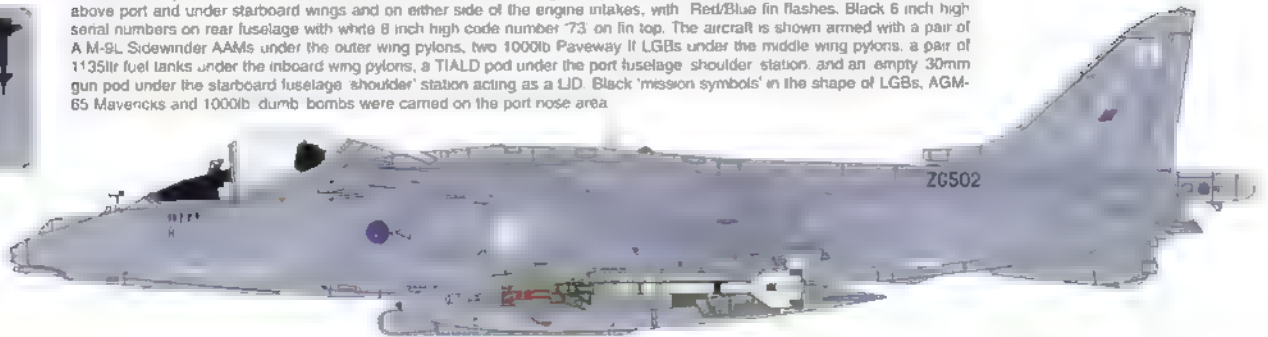
Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '67' on fin top. The aircraft is shown armed with four RBL755 under the outer and middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, and a pair of 'empty' 30mm gun pod under the port/starboard fuselage 'shoulder' station acting as a LID. Black 'mission symbols' in the shape of LGBs. BL755s and dumb bombs were carried on the starboard nose area



## Bae Harrier GR7

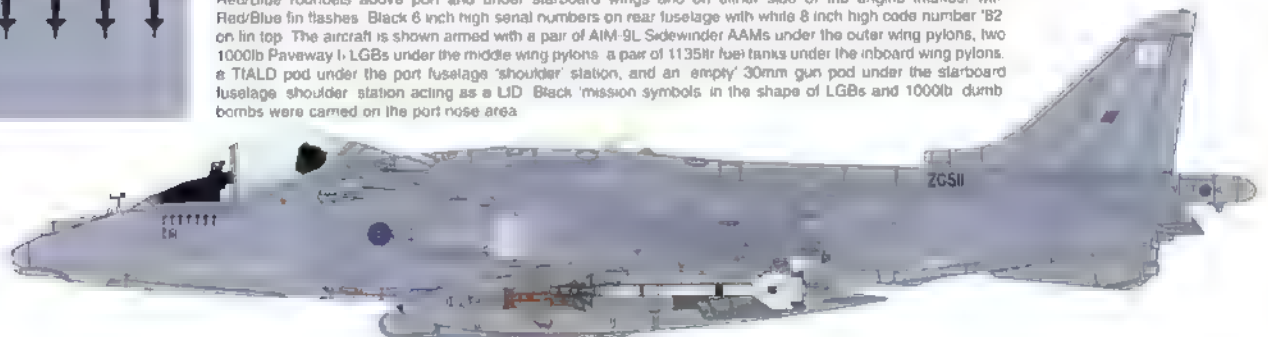
### Harrier GR.7, ZG502/73 of No 3 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003. (UK Base RAF Cottesmore)

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '73' on fin top. The aircraft is shown armed with a pair of AIM-9L Sidewinder AAMs under the outer wing pylons, two 1000lb Paveway II LGBs under the middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, a TIALD pod under the port fuselage 'shoulder' station, and an 'empty' 30mm gun pod under the starboard fuselage 'shoulder' station acting as a LID. Black 'mission symbols' in the shape of LGBs, AGM-65 Mavericks and 1000lb dumb bombs were carried on the port nose area.



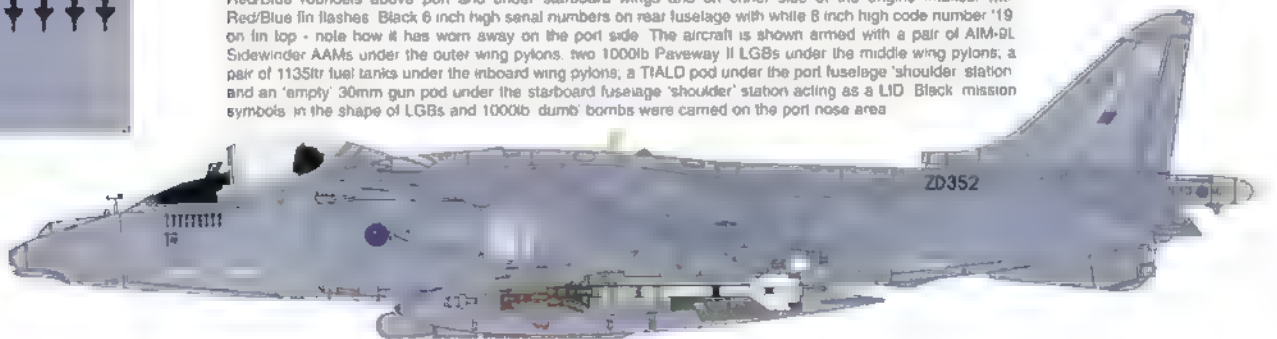
### Harrier GR.7, ZG511/82 of No 3 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003. (UK Base RAF Cottesmore)

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '82' on fin top. The aircraft is shown armed with a pair of AIM-9L Sidewinder AAMs under the outer wing pylons, two 1000lb Paveway II LGBs under the middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, a TIALD pod under the port fuselage 'shoulder' station, and an 'empty' 30mm gun pod under the starboard fuselage 'shoulder' station acting as a LID. Black 'mission symbols' in the shape of LGBs and 1000lb dumb bombs were carried on the port nose area.



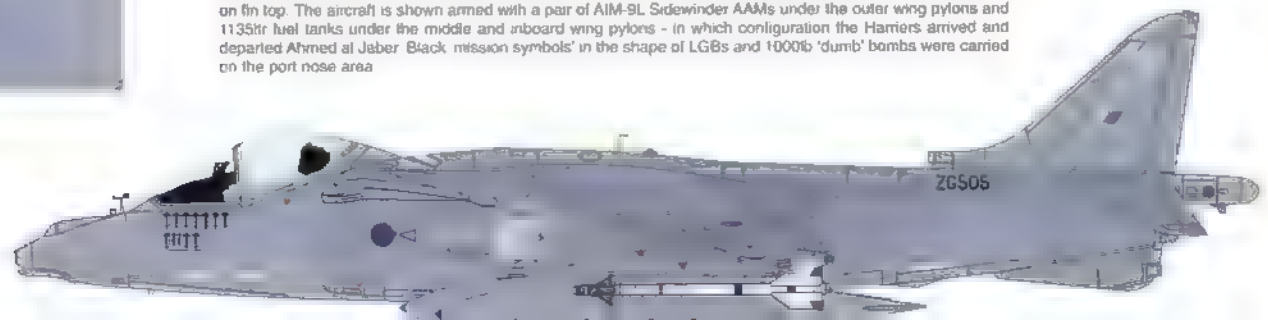
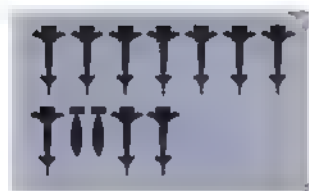
### Harrier GR.7, ZD352/19 of No 4 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003. (UK Base RAF Cottesmore)

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '19' on fin top - note how it has worn away on the port side. The aircraft is shown armed with a pair of AIM-9L Sidewinder AAMs under the outer wing pylons, two 1000lb Paveway II LGBs under the middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, a TIALD pod under the port fuselage 'shoulder' station and an 'empty' 30mm gun pod under the starboard fuselage 'shoulder' station acting as a LID. Black 'mission symbols' in the shape of LGBs and 1000lb 'dumb' bombs were carried on the port nose area.



### Harrier GR.7, ZG505/76 of No 4 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003. (UK Base RAF Cottesmore)

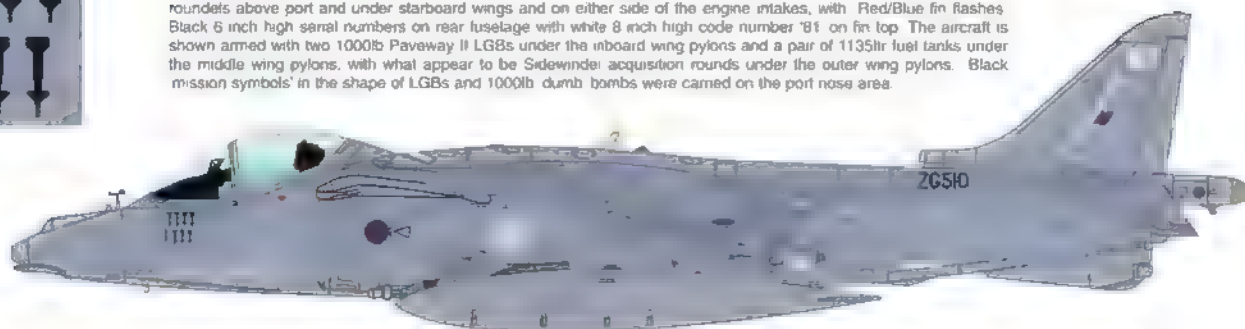
Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '76' on fin top. The aircraft is shown armed with a pair of AIM-9L Sidewinder AAMs under the outer wing pylons and 1135ltr fuel tanks under the middle and inboard wing pylons - in which configuration the Harriers arrived and departed Ahmed al Jaber. Black 'mission symbols' in the shape of LGBs and 1000lb 'dumb' bombs were carried on the port nose area.





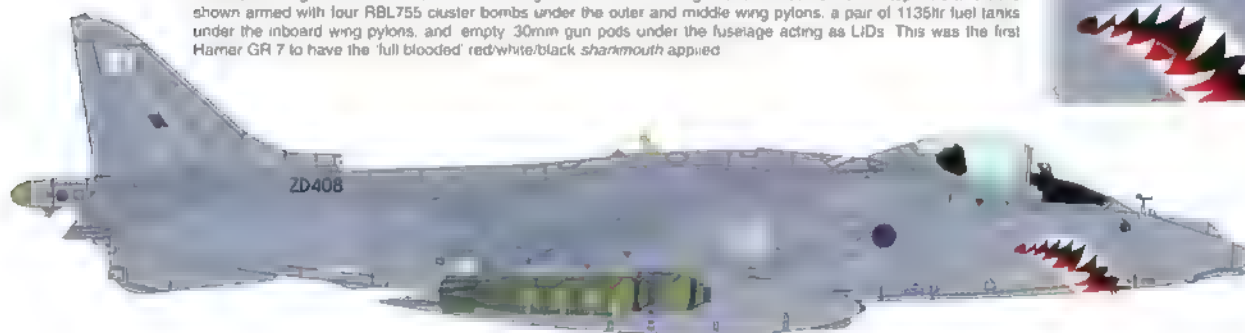
**Harrier GR.7, ZG510/81 of No 4 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003. (UK Base RAF Cottesmore)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '81' on fin top. The aircraft is shown armed with two 1000lb Paveway II LGBs under the inboard wing pylons and a pair of 1135ltr fuel tanks under the middle wing pylons, with what appear to be Sidewinder acquisition rounds under the outer wing pylons. Black 'mission symbols' in the shape of LGBs and 1000lb dumb bombs were carried on the port nose area.



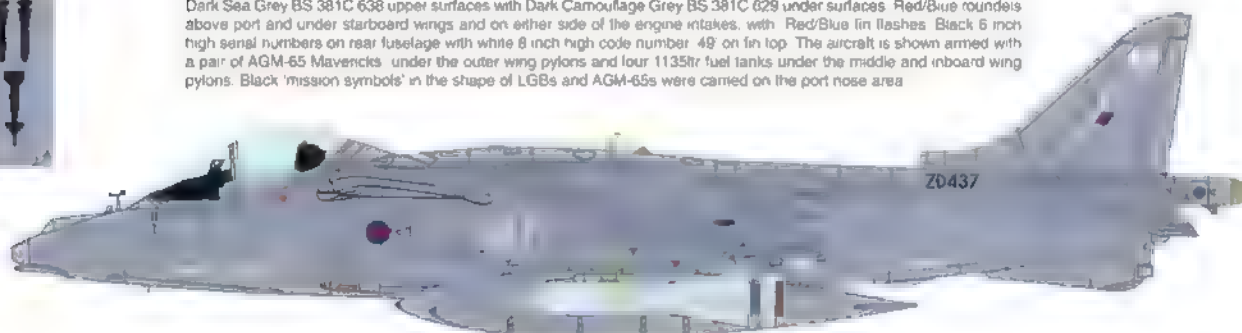
**Harrier GR 7, ZD408/37 of No 20(R) Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003, (UK Base RAF Witterling)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '37' on fin top. The aircraft is shown armed with four RBL755 cluster bombs under the outer and middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, and empty 30mm gun pods under the fuselage acting as LIDs. This was the first Harrier GR 7 to have the 'full blooded' red/white/black sharkmouth applied.



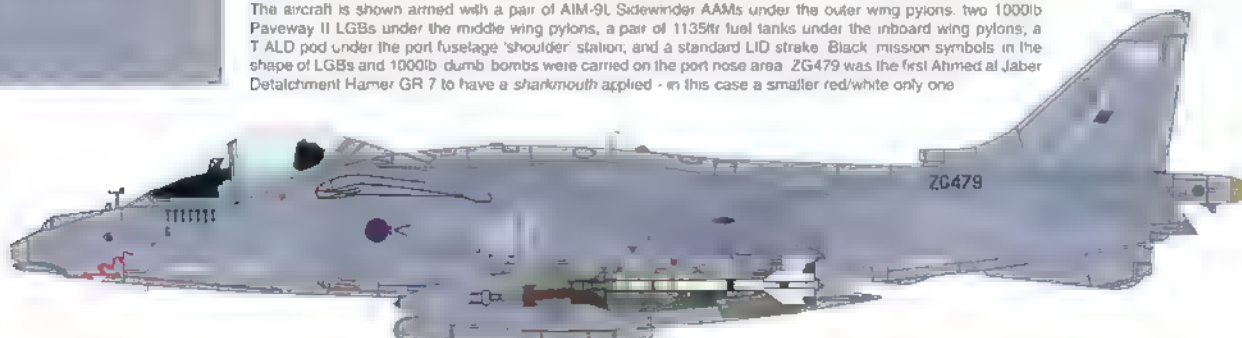
**Harrier GR.7, ZD437/49 of No 20(R) Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003, (UK Base RAF Witterling)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '49' on fin top. The aircraft is shown armed with a pair of AGM-65 Mavericks under the outer wing pylons and four 1135ltr fuel tanks under the middle and inboard wing pylons. Black 'mission symbols' in the shape of LGBs and AGM-65s were carried on the port nose area.

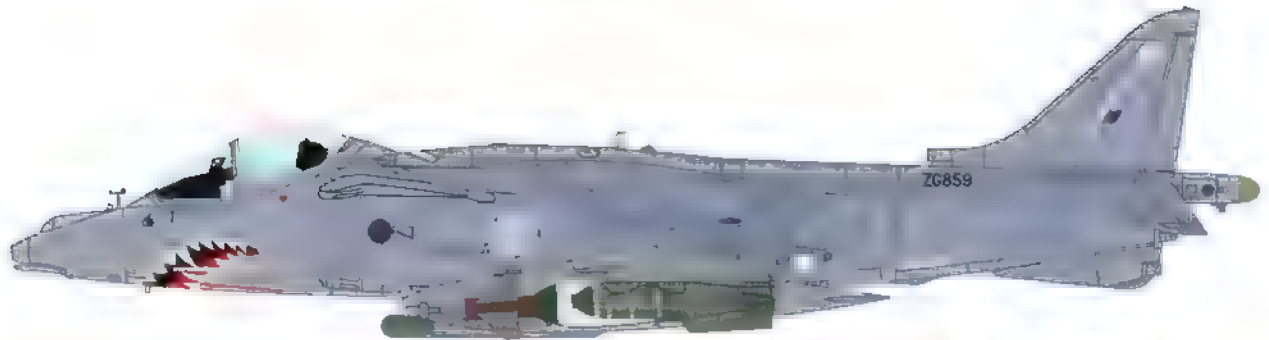


**Harrier GR.7, ZG479/89 of the SAGEU, Ahmed al Jaber Air Base, Kuwait, spring 2003 (UK Base Boscombe Down)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '89' on fin top. The aircraft is shown armed with a pair of AIM-9L Sidewinder AAMs under the outer wing pylons, two 1000lb Paveway II LGBs under the middle wing pylons, a pair of 1135ltr fuel tanks under the inboard wing pylons, a T ALD pod under the port fuselage 'shoulder' station, and a standard LID stake. Black 'mission symbols' in the shape of LGBs and 1000lb dumb bombs were carried on the port nose area. ZG479 was the first Ahmed al Jaber Detachment Harrier GR 7 to have a sharkmouth applied - in this case a smaller red/white only one.

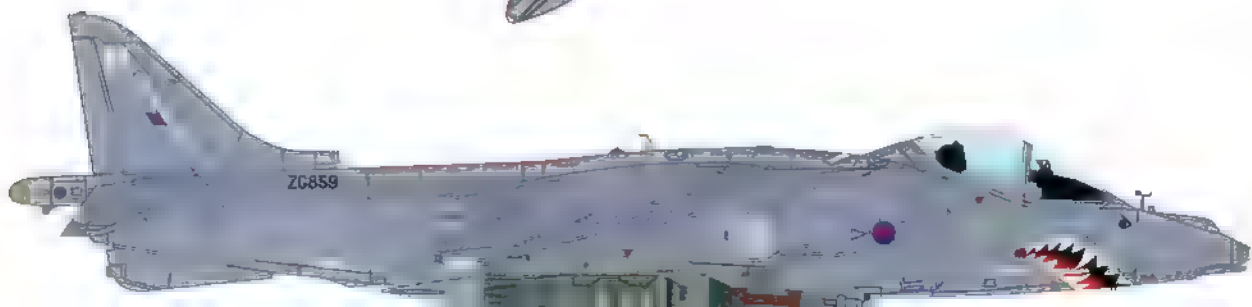
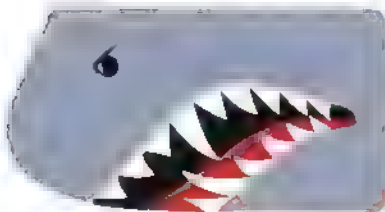
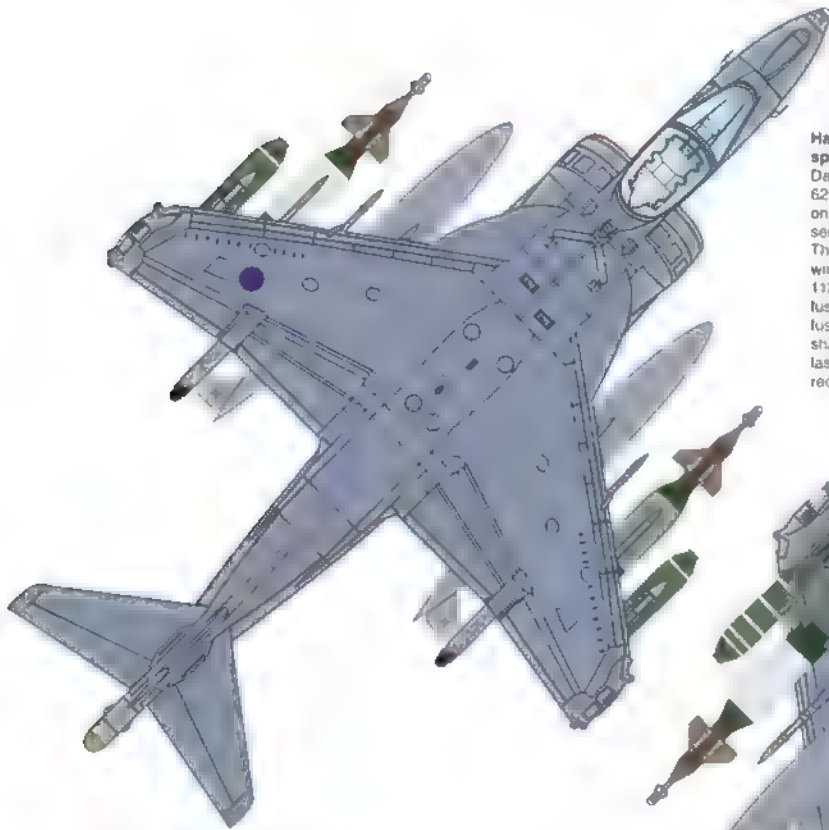


## BaE Harrier GR.7



**Harrier GR.7, ZG859/91 of No 4 Squadron, Ahmed al Jaber Air Base, Kuwait, spring 2003. (UK Base RAF Cottesmore)**

Dark Sea Grey BS 381C 638 upper surfaces with Dark Camouflage Grey BS 381C 629 under surfaces. Red/Blue roundels above port and under starboard wings and on either side of the engine intakes, with Red/Blue fin flashes. Black 6 inch high serial numbers on rear fuselage with white 8 inch high code number '91' on fin top. The aircraft is shown armed with a pair of RBL795 cluster bombs under the outer wing pylons, two 1000lb Paveway II LGBs under the middle wing pylons, a pair of 1135llr fuel tanks under the inboard wing pylons, a TIALD pod under the port fuselage 'shoulder' station, and an 'empty' 30mm gun pod under the starboard fuselage 'shoulder' station acting as a LID. A single black 'mission symbol' in the shape of an LGB was carried on the port nose area. ZG859 was the second (and last) Ahmed al Jaber Detachment Harrier GR.7 to have the 'full blooded' red/white/black sharkmouth applied.







Facing page top: ZD468/58 on the hardstanding at Ahmed al Jaber Air Base, Kuwait, home to at least twelve Harrier GR 7s during the conflict. (Credit: James Douthwaite)

Far left: Close-up of one of the Enhanced Paveway LGBs, in this case a 1000lb Paveway II. Note the ducting along the body and over the rear of the bomb casing. (Credit: James Douthwaite)

Left: AIM-9L and a standard 1000lb General Purpose 'dumb' bomb loaded on to a Harrier GR.7. (Credit: James Douthwaite)

Facing page bottom: ZG505/76 on the hardstanding at Ahmed al Jaber Air Base, Kuwait. Note the asymmetric positioning of the wing roundels - port upper and starboard under. (Credit: James Douthwaite)

This page above: The Brits abroad! Harrier GR.7, ZG510/81 taxiing past the Union Flag at the Ahmed al Jaber Air Base. (Credit: James Douthwaite)

Right: A pair of 2000lb Paveway III LGBs awaiting their fins and loading on to a Harrier GR.7. Note the different colours of the bombs. (Credit: James Douthwaite)

Below: Three RAF Harrier GR 7s on the hardstanding at Ahmed al Jaber - miles from anywhere! (Credit: James Douthwaite)



# Jaguar GR.3



in a similar vein to the Tornados from RAF Marham, RAF Coltishall prepared to deploy its first Jaguar GR.3s and GR.3As to the Gulf. Again as with the Tornado GR.4, the Jaguar, in its updated GR.3 form, is now a far more capable beast than it was in the 1991 Gulf conflict. Indeed it was that war that saw a resurgence in the 'Cat's' abilities and considerable investment was made in the aircraft following the first Iraqi conflict, with the addition of TIALD, new engines and updated systems.

The Jaguar had been a 'regular' in the RAF's 'Operation Northern Watch' operating from Incirlik in Turkey, and has also gained vital experience over Bosnia and Kosovo.

The Jaguars all went through the Coltishall paint shop, emerging in the new overall light grey ARTF, (Alkaline Removable Temporary Finish - Camouflage Grey BS 381C 626), scheme. However, after Turkey refused to allow coalition aircraft to operate from its bases and it would appear that the Jaguar Detachment was put on 'hold'. Unfortunately, at the time of writing no information is available as to what, if any, role the Jaguars played in 'Operation Telic'.



Heading and bottom of page: Jaguar GR.3s leave their home base of RAF Coltishall for the warmer weather of the Gulf - XZ369/EF (top) and XZ109/EN (below). (Credit: Jamie Hunter)

Above: A Jaguar GR.3 is prepared in the Coltishall paint shop. (Credit: Jamie Hunter)

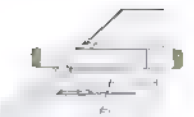
Right: Having been painted up, a GR.3 waits for a call to arms. (Credit: Jamie Hunter)



## Sepecat Jaguar GR.3/3A

Nosewheel door View

Port View



Starboard View

**Jaguar GR.3A, XZ369/EF, of No 6 Squadron, Incirlik, Turkey, spring 2003, (UK Base RAF Coltishall)**  
 Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, no fin flashes appear to have been carried. White 8 inch high serial numbers on rear fuselage with white 12 inch high code letters 'EF' on fin top. The aircraft is illustrated carrying overwing AIM-9L Sidewinders and a TIALD pod under the fuselage centreline with four 1200ltr fuel tanks under the four wing pylons - in which configuration the Jaguars departed Coltishall.

Nosewheel door View

Port View

Starboard View

**Jaguar GR.3A, XZ109/EN, of No 6 Squadron, Incirlik, Turkey, spring 2003, (UK Base RAF Coltishall)**  
 Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, no fin flashes appear to have been carried. White 8 inch high serial numbers on rear fuselage with white 12 inch high code letters 'EN' on fin top. The aircraft is illustrated carrying the new Vinten, Series 603, GP(1) EO, electro-optical reconnaissance pod under the fuselage centreline with 1200ltr fuel tanks under the four wing pylons. It is thought that RAF Jaguars may have operated out of a currently undisclosed location on reconnaissance missions in a similar configuration to this.

# Canberra PR.9 and Nimrod MR.2P



One of the 'unseen' elements in 'Operation Telic' was the participation of the Canberra PR.9s of No 39 Squadron (1PRU). Now beyond the twilight of its illustrious career, the Canberra PR.9 nevertheless provided a vital stand-off reconnaissance asset to the force commanders. Five or so Canberra PR.9s were available for use during this latest Gulf Conflict which followed the type's other recent operational deployments, in Rwanda and Zaire, Bosnia-Herzegovina, Kosovo and Afghanistan, and operations over the Balkans, Kosovo and as far away as Uganda, proving that effectiveness is not necessarily hampered by age! The Canberra PR.9s that deployed are 44 years old this year!

The squadron was tasked with the important Anti-Tactical Ballistic Missile reconnaissance role - 'Scud Hunting'. W/Cdr Ken Smith, OC 39 (1PRU) Squadron explained that despite their age, the aircraft are still performing magnificently, "It is a mature aircraft, but also an extremely capable aircraft - although it does now take a lot of work for the engineers to keep it serviceable

In the hot, dry weather we got about 95 percent serviceability, which is really good for an aircraft of that age."

Also notable is the experience of the squadron's aircrew, with both a pilot and a navigator flying recent combat missions at the age of 57! It was further proof of the capability of the PR.9, which is rapidly approaching the end of its service life as it is deemed uneconomic to operate - its age simply means spare parts are hard to find, plus the wooden fin construction requires carpenters to be retained in an age of composite materials and electronic trickery.

The aircraft's camera fit has developed through a number of stages over its life and a variety of daytime 'wet' cameras are used for medium and higher level vertical and oblique photography. An optional self-contained Electro-Optical Long-Range Oblique Photographic sensor (EO-LOROP), recording imagery in digital format on magnetic tape for exploitation at a ground station can now be carried. In addition to the sensor platform updates the PR.9 has a much enhanced navigation suite and defensive systems.



Heading: Bomber Boulevard - Three Canberra PR.9s on the apron at Prince Sultan Air Base. (via Jon Freeman)

Top: XH168, 'Eastern Promise'. (Credit Crown Copyright)

Above: XH135, 'Persian Princess'. (Credit Crown Copyright)

Left: The tail end of XH135. Note the EO-LOROP photographic sensor under the rear fuselage. (via Jon Freeman)

Below: One of the Canberra PR.9s of 39(1PRU) Sqn., without any nose art, which flew Scud hunting missions during 'Operation Telic'. (Credit Crown Copyright)



## Hawker Siddeley Nimrod MR.2

Nimrod MR.2P, XV241/41, named 'Guernsey's Girl II' of the Maritime Reconnaissance Wing, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Kinloss)

Camouflage Beige BS 381C 389 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Pale Red/Pale Blue roundels above wings and on either side of the rear fuselage with Pale Red/Pale Blue fin flashes. White 12 inch high serial numbers on rear fuselage with white 36 inch high code number '41' on the fin, repeated on the front of the nose. Colour 'artwork' and name *Guernsey's Girl II* on starboard nose with twenty-six Palm Tree 'mission' symbols.



Nimrod MR.2P, XV235/35, named 'Saddam... You are the weakest link "Goodbye!!"' of the Maritime Reconnaissance Wing, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Kinloss)

Camouflage Beige BS 381C 389 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Pale Red/Pale Blue roundels above wings and on either side of the rear fuselage with white 12 inch high serial numbers on rear fuselage with white 36 inch high code number '35' on the fin, repeated on the front of the nose. Artwork and the words *Saddam... You are the weakest link "Goodbye!!"* on starboard nose. It is not known at the time of publication whether XV235 carried any mission symbols.

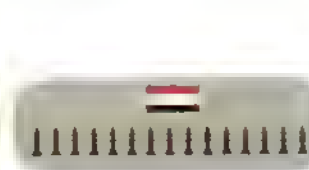
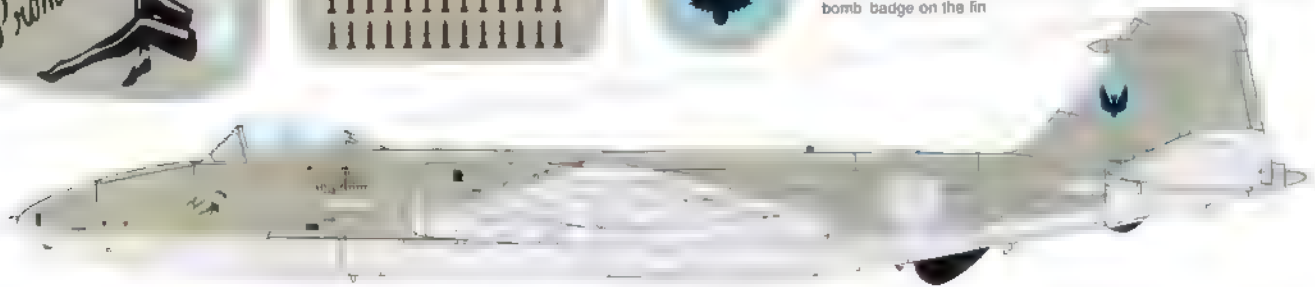
**SADDAM...  
YOU ARE THE WEAKEST LINK**



## English Electric Canberra PR.9

Canberra PR.9, XH168, named 'Eastern Promise' of No 39 (1 PRU) Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Marham)

Camouflage Beige BS 381C 389 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Pale Red/Pale Blue roundels above wings and on either side of the rear fuselage with Pale Red/Pale Blue fin flashes. White 12 inch high serial numbers on rear fuselage. Artwork and the words *Eastern Promise* on port nose with forty-one Scud 'mission' symbols below and Iraqi flag. Note the 39 Sqn 'winged bomb' badge on the fin.



Canberra PR.9, XH1359, named 'Persian Princess' of No 39 (1 PRU) Squadron, Prince Sultan Air Base, Saudi Arabia, spring 2003, (UK Base RAF Marham)

Camouflage Beige BS 381C 389 upper surfaces with Light Aircraft Grey BS 381C 627 under surfaces. Pale Red/Pale Blue roundels above wings and on either side of the rear fuselage with Pale Red/Pale Blue fin flashes. White 12 inch high serial numbers on rear fuselage. Artwork and the words *Persian Princess* on port nose with forty-one Scud 'mission' symbols below and Iraqi flag.





Above: Nimrod MR.2P, XV250/50, the 'Maid of Moray', one of several Nimrod MR.2Ps involved in 'Operation Telic'. (Credit: Crown Copyright)

Above right: XV235/35, was marked with 'Saddam You are the weakest link - Goodbye'. (Credit: Crown Copyright)

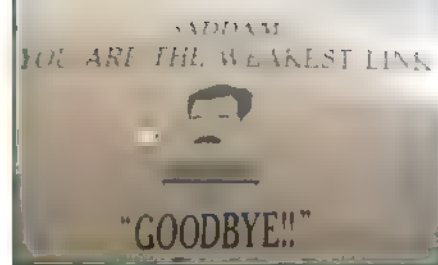
Right: Nimrod MR 2P, XV241/41 'Guernsey's Girl II' from No 201 Squadron ... ..had twenty-six palm tree 'mission markings' applied. (Credit: Crown Copyright)

The RAF's Maritime Patrol specialists were once again called into action in the skies above the Gulf. The Nimrods have been regularly deployed to Seeb since the 1991 Gulf War and, at a time when their active numbers are reduced due to the MR.4 upgrade programme, they still performed as advertised.

Aircraft and crews from RAF Kinloss mounted long patrols in support of

'Operation Telic'. Fifty personnel from Nos 201 and 206 Squadrons along with seven Nimrods from the Kinloss Wing, took part in the reconnaissance and surveillance missions.

At least two Nimrods are known to have carried artwork, and XV241 'Gurnsey's Girl II' was a direct reference to a similarly named aircraft that was operated in the 1991 conflict



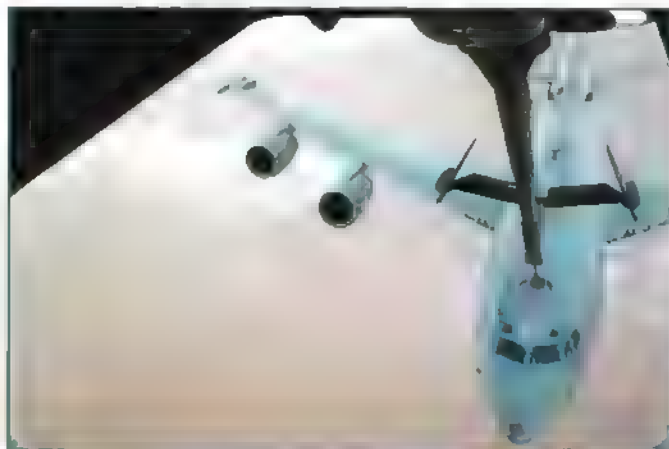
They also served.....

Left: Vital to the success of any mission was aerial refuelling. Here a VC10 refuels two Tornado F3s. (Credit: Crown Copyright)

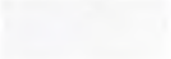
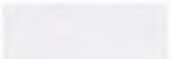










Below: An RAF E-3 Sentry AWACS takes on fuel from a USAF KC-135. (Credit: Crown Copyright)

Bottom right: Heavy lift was provided by the RAF's small fleet of C-17 Globemasters. (Credit: Crown Copyright)

Bottom left: One of the smallest jets in 'Operation Telic' was the HS.125 (Credit: Crown Copyright)



# Operation Telic Colour Chart

British Standard BS 381C number	FS 595b match	Description of use
 Camouflage Grey BS 381C 626	FS 36314	Used in a permanent finish on the upper surfaces of the standard Tornado F.3 scheme, or as an overall Alkaline Removeable Temporary Finish on Tornado GR.4/4As and Jaguar GR.3/3As for 'Operation Telic'
 Light Aircraft Grey BS 381C 627	FS 36440	Standard under surface colour of Tornado F.3s, Nimrod MR.2Ps and Canberra PR.9s
 Dark Camouflage Grey BS 381C 629	FS 36237	Standard under surface colour of Harrier GR.7s (and Tornado GR.4/4As and Jaguar GR.3/3As prior to overall Camouflage Grey ARTF repaint for 'Operation Telic') and the repainted nose radomes on overall Camouflage Grey ARTF Tornado GR.4/4As used in 'Operation Telic'
 Medium Sea Grey BS 381C 637	FS 36270	Possibly used as an alternative nose radome colour on locally repainted Lossiemouth-based Tornado GR.4s used in 'Operation Telic'
 Dark Sea Grey BS 381C 638	FS 36118	Standard upper surface colour of Harrier GR.7s, (as retained in 'Operation Telic'), and of Tornado GR.4/4As and Jaguar GR.3/3As prior to overall Camouflage Grey ARTF repaint for 'Operation Telic'
 Tornado F.3 Radome Grey		Possibly the manufacturer applied colour alternative for Tornado F.3 radomes
 Camouflage Beige (Hemp) BS 381C 389	FS 30277	Standard upper surface colour of Nimrod MR.2Ps and Canberra PR.9s
 Cherry (Roundel Red) BS 381C 538		Standard roundel/fin flash red used on the Harrier GR.7s, (plus Tornado GR.4s and Jaguar GR.3s) in the Dark Sea Grey/Dark Camouflage Grey scheme
 Roundel Blue BS 381C 110		Standard roundel/fin flash blue used on the Harrier GR.7s, (plus Tornado GR.4s and Jaguar GR.3s) in the Dark Sea Grey/Dark Camouflage Grey scheme
 Pale Roundel Red BS 381C 454	}	Lo-viz roundel/fin flash pale pink and pale blue used as standard on Tornado F.3s and on the overall Camouflage Grey ARTF repainted Tornado GR.4s and Jaguar GR.3s for 'Operation Telic'
 Pale Roundel Blue BS 381C 172		
 Pale Roundel Red (Darker variation)		Darker version of lo-viz roundel/fin flash pale pink seen on several overall Camouflage Grey ARTF repainted Tornado GR.4s during 'Operation Telic'



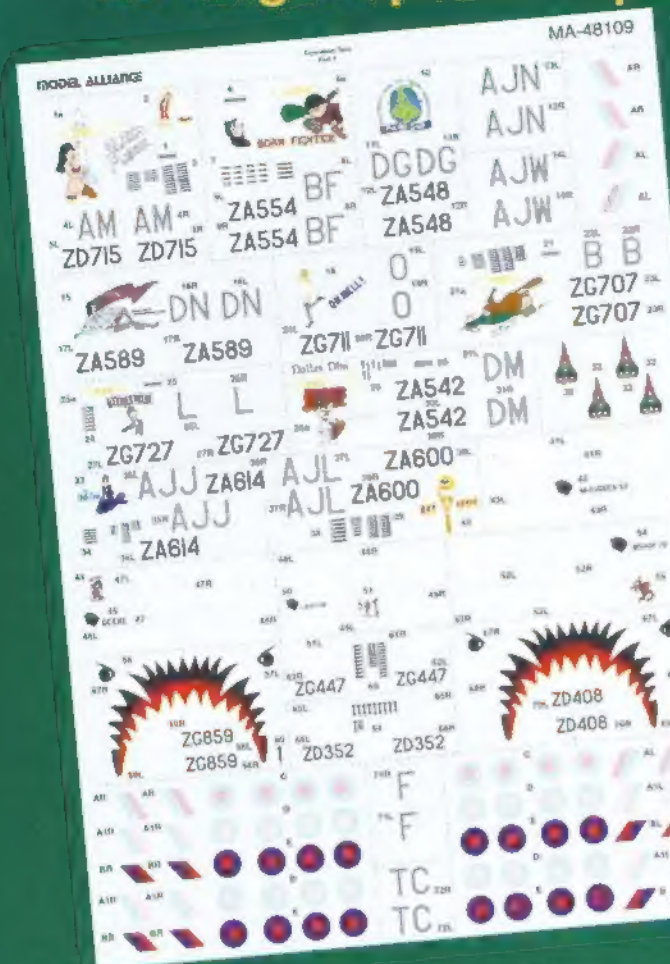
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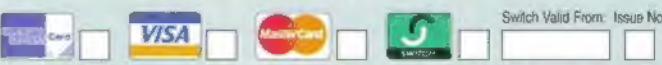
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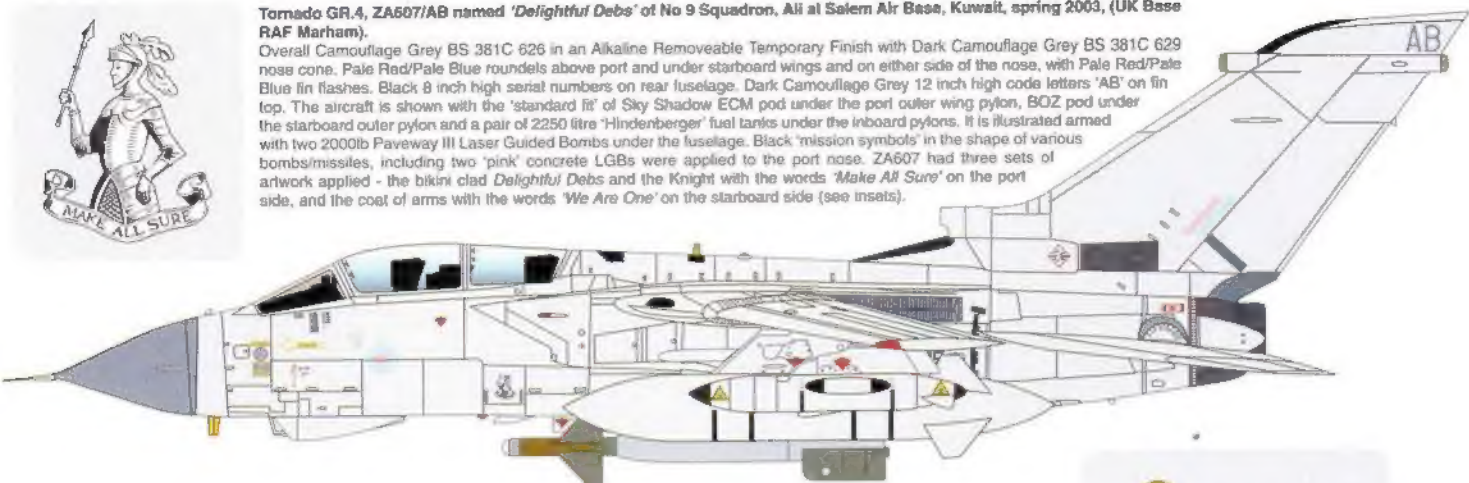
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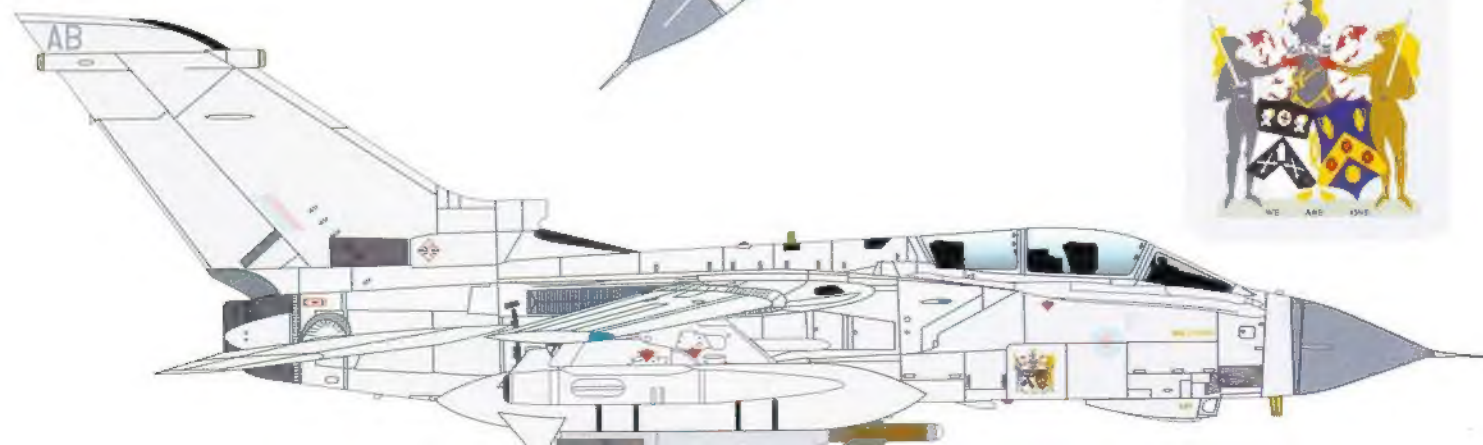
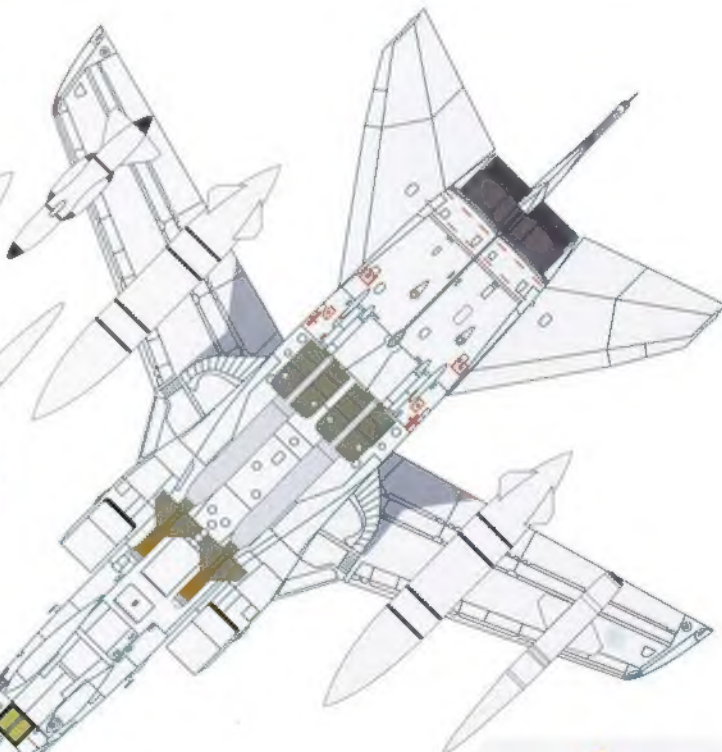
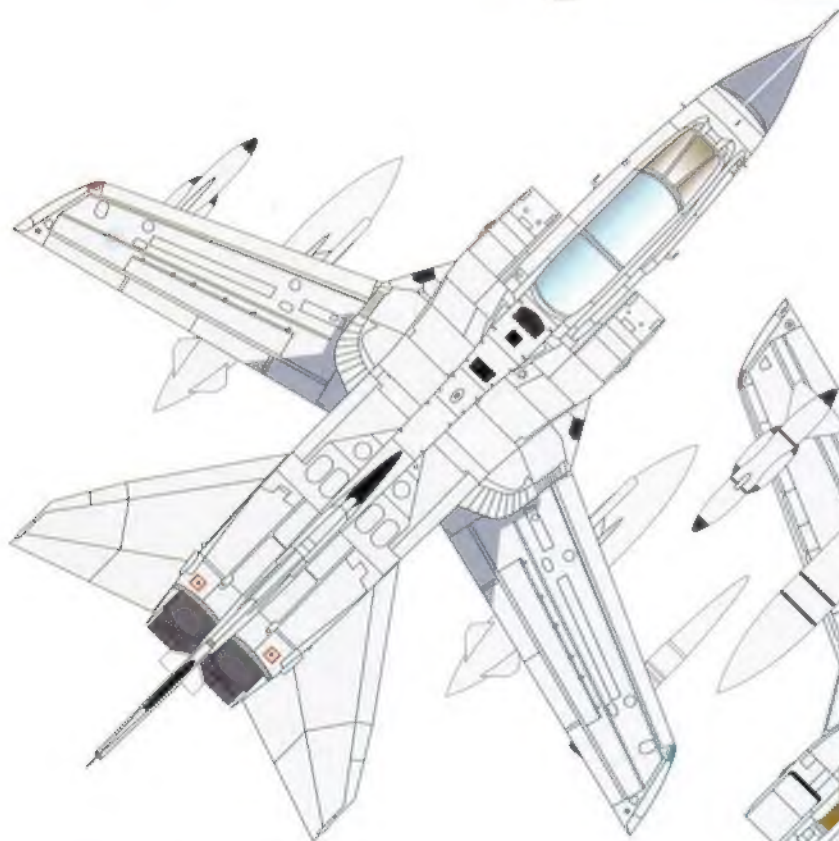
## Panavia Tornado GR4

Tornado GR.4, ZA607/AB named '*Delightful Debs*' of No 9 Squadron, Ali al Salem Air Base, Kuwait, spring 2003, (UK Base RAF Marham).

Overall Camouflage Grey BS 381C 626 in an Alkaline Removeable Temporary Finish with Dark Camouflage Grey BS 381C 629 nose cone. Pale Red/Pale Blue roundels above port and under starboard wings and on either side of the nose, with Pale Red/Pale Blue fin flashes. Black 8 inch high serial numbers on rear fuselage. Dark Camouflage Grey 12 inch high code letters 'AB' on fin top. The aircraft is shown with the 'standard fit' of Sky Shadow ECM pod under the port outer wing pylon, BOZ pod under the starboard outer pylon and a pair of 2250 litre 'Hindenberg' fuel tanks under the inboard pylons. It is illustrated armed with two 2000lb Paveway III Laser Guided Bombs under the fuselage. Black 'mission symbols' in the shape of various bombs/missiles, including two 'pink' concrete LGBs were applied to the port nose. ZA607 had three sets of artwork applied - the bikini clad *Delightful Debs* and the Knight with the words '*Make All Sure*' on the port side, and the coat of arms with the words '*We Are One*' on the starboard side (see insets).



*Delightful  
Debs*





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